F·A·A·M facility for airborne atmospheric measurements

# FLIGHT FOLDER


| | |
|---|---|
| Flight No.: | B326 |
| Date: | 12 September 2007 |
| Take Off | 08:32:31 |
| Landing: | 13:52:49 |
| Flight Time | 5h 20m 18s |

**Campaign:** CAESAR

**Operating Area:** SW approaches

| POB | Position | Name | Institute |
|---|---|---|---|
| 1 | Captain | Alan Roberts | Directflight |
| 2 | Co-pilot | Luc Lathouwers | Directflight |
| 3 | CCM 1 | Gaynor Ottaway | Directflight |
| 4 | Mission Scientist 1 | Stuart Newman | Met Office |
| 5 | Flight Manager | Jim Crawford | FAAM |
| 6 | Core Chem / CCM2 / AVAPS | Steve Devereau | FAAM |
| 7 | Cloud Physics | Martyn Pickering | Met Office |
| 8 | Shims SWS | Ian Rule | Met Office |
| 9 | ARIES | Joss Kent | Met Office |
| 10 | Mission Scientist 2 | Andreas Keil | Met Office |
| 11 | MARSS | Dave Pollard | Met Office |
| 12 | TAFTS | Paul Green | Imperial |
| 13 | | | |
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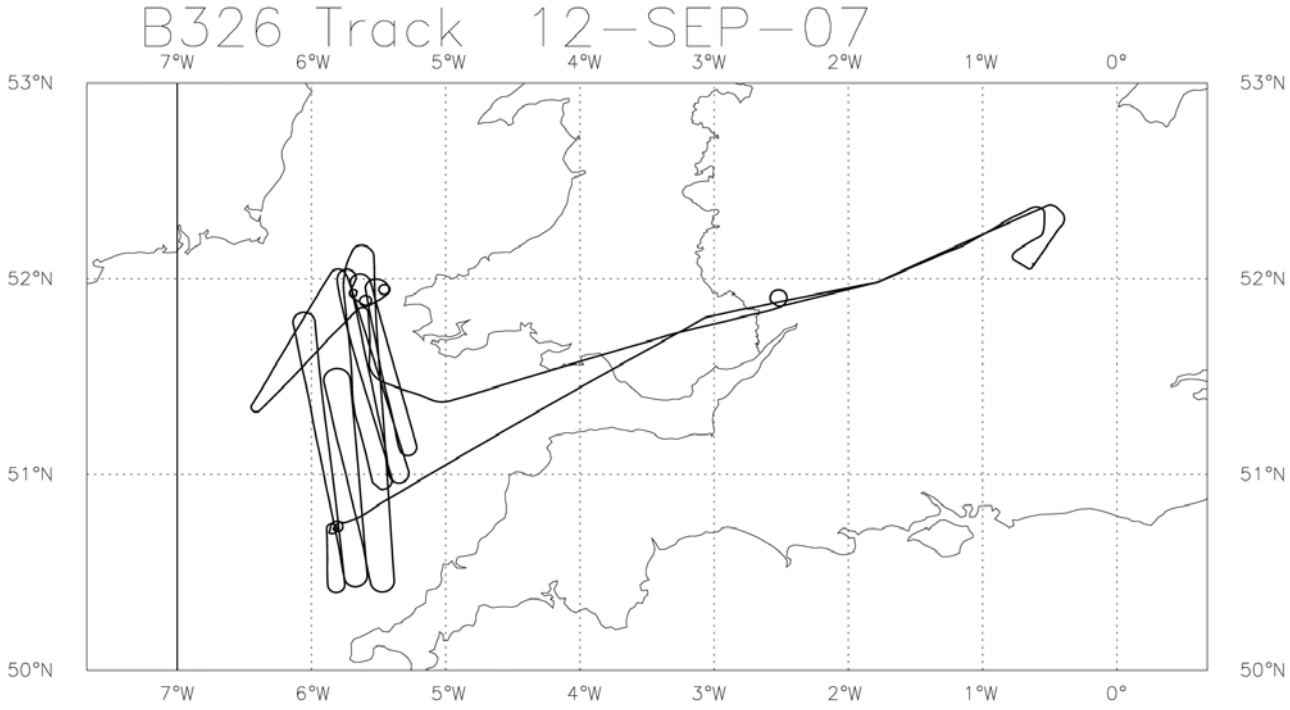
**Flight Track:**

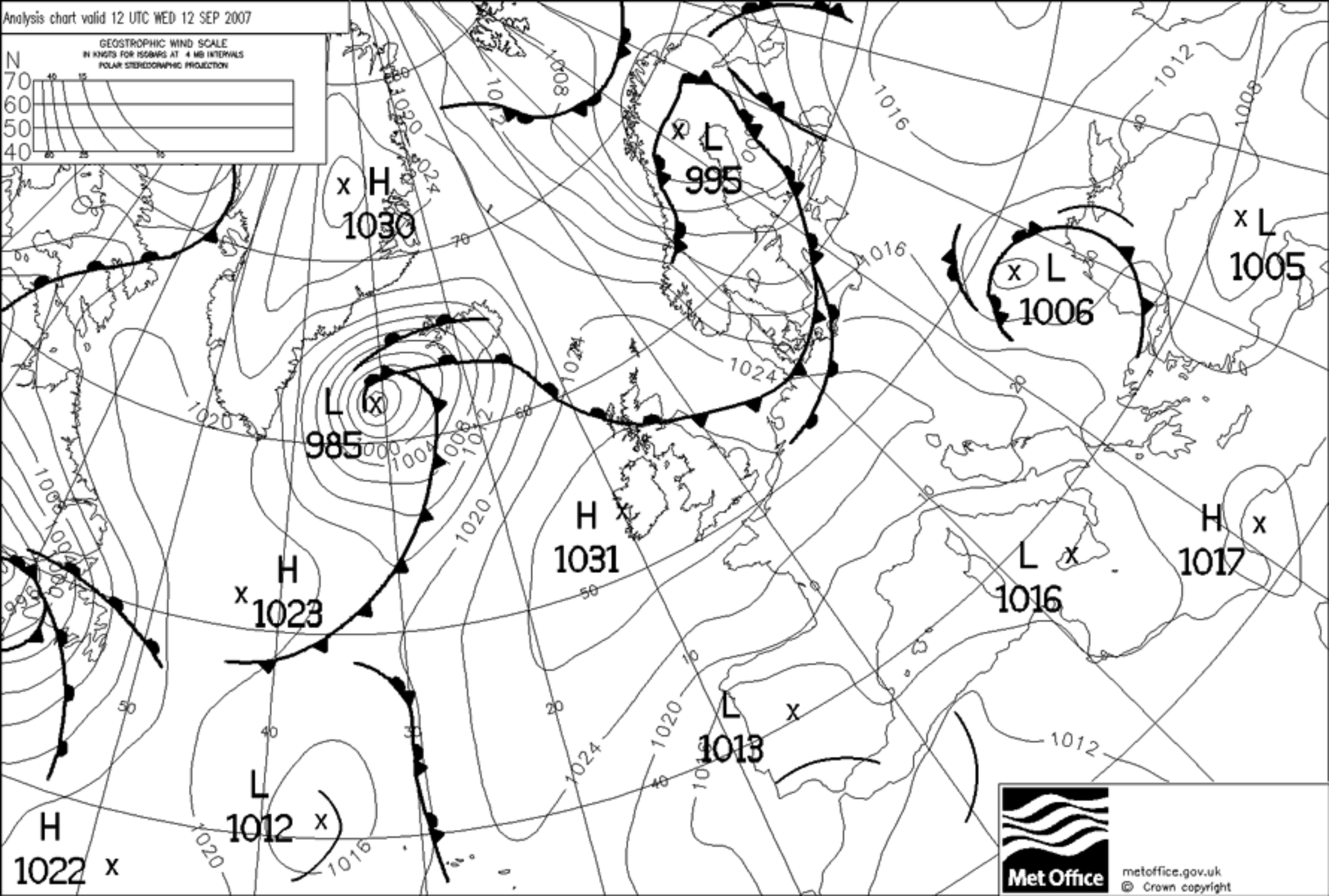


FLIGHT SUMMARY

Flight No B326
Date: 12 September 2007
Project: CAESAR
Location: SW approaches

| Start Time | End Time | Event | Height (s) | Hdg | Comments |
|---|---|---|---|---|---|
| 080312 | | cgps | -.07 kft | 126 | b326cgps.log |
| 080321 | | inu | -.07 kft | 126 | to nav |
| 080329 | | GIN | -.07 kft | 126 | on |
| 082518 | | heimann | -.07 kft | 126 | close |
| 082528 | | bbr | -.07 kft | 126 | extend |
| 082818 | | asp | -.06 kft | 176 | open |
| 083231 | | T/O | -.08 kft | 212 | Cranfield |
| 083337 | | heimann | 1.2 kft | 309 | open |
| 084433 | | nev | 10.0 kft | 240 | zero |
| 084541 | | jw | 10.0 kft | 241 | zero |
| 084624 | | twc | 10.0 kft | 249 | power cycled |
| 084716 | | heimann | 10.0 kft | 246 | cal08 |
| 085821 | | video | 18.0 kft | 298 | #1 UP, #2Forward start |
| 090934 | | bbr | 18.0 kft | 254 | retract |
| 091330 | 093234 | Profile 1 | 18.0 - -.41 kft | 252 | 50ft |
| 091353 | | bbr | 17.7 kft | 252 | extend |
| 092515 | | entering cloud | 6.1 kft | 292 | |
| 092629 | | clear | 4.9 kft | 294 | |
| 093255 | | bbr | -.36 kft | 357 | retract |
| 093520 | 094518 | Run 1.1 | -.35 - -.28 kft | 221 | |
| 093534 | | heimann | -.34 kft | 220 | cal09 |
| 093553 | | nev | -.30 kft | 220 | zero |
| 094711 | 101353 | Profile 2 | -.36 - 24.0 kft | 029 | |
| 094741 | | bbr | 0.03 kft | 030 | extend |
| 095849 | | p2 | 10.9 kft | 027 | interrupt |
| 100039 | | p2 | 11.0 kft | 164 | restart |
| 101450 | | bbr | 24.0 kft | 244 | retract |
| 101542 | | heimann | 24.0 kft | 330 | cal06 |
| 101614 | | TWC | 24.0 kft | 350 | status flashing -28C |
| 101753 | 102755 | Run 2.1 | 23.1 - 23.0 kft | 348 | |
| 101828 | | heimann | 23.0 kft | 347 | cal05 |
| 101902 | | nev | 23.0 kft | 347 | zero |
| 102300 | | Sonde 1 | 23.0 kft | 347 | |
| 102557 | | video | 23.0 kft | 347 | #1 now up, #2 now dow |
| 102953 | 103946 | Run | 23.1 - 23.0 kft | 165 | r2.2 |
| 104007 | | heimann | 23.0 kft | 194 | cal05 |
| 104044 | | nev | 23.0 kft | 257 | zero |
| 104136 | 105138 | Run 2.3 | 23.0 kft | 342 | |
| 105352 | 105528 | Orbit 1 | 23.1 - 23.0 kft | 222 | 240M start 51' rhd |
| 105648 | 105832 | Orbit 2 | 23.1 - 23.0 kft | 282 | 290M 51' rhd |
| 105931 | 110047 | Orbit 3 | 23.0 - 22.6 kft | 007 | 00 |
| 110132 | | ! | 23.3 kft | 013 | update fltsumm restarted |
| 110400 | 110525 | Profile 3 | 25.0 kft | 167 | |
| 110808 | 111523 | Run 3.1 | 25.0 kft | 166 | start 11:05:25 |
| 110901 | | ! | 25.0 kft | 166 | all fm pc windows app lications restarted |
| 111723 | 112402 | Profile 4 | 25.0 - 30.0 kft | 347 | |
| 112337 | | p4 | 30.1 kft | 357 | interrupt |
| 112403 | 113045 | run 4.1 | 30.0 kft | 356 | |
| 112518 | | heimann | 30.0 kft | 354 | cal04 |
| 113351 | 113947 | Profile 5 | 30.0 - 33.0 kft | 179 | |
| 113947 | 114949 | Run 5.1 | 33.0 kft | 176 | |
| 114147 | | heimann | 33.0 kft | 176 | cal04 |
| 114531 | | nev | 33.0 kft | 176 | zero |
| 115149 | 120249 | Run 5.2 | 33.0 kft | 347 | |
| 115842 | | Sonde 2 | 33.0 kft | 346 | |
| 120147 | | video | 33.0 kft | 347 | #5 UP, #6 DOWN start |
| 120505 | 121524 | Run 5.3 | 33.0 kft | 175 | |
| 120910 | | Sonde 3 | 33.0 kft | 175 | |
| 121747 | 122215 | Profile 6 | 33.1 - 29.0 kft | 348 | |

| | | | | | |
|---|---|---|---|---|---|
| 122215 | 123217 | Run 6.1 | 29.0 kft | 348 | |
| 123423 | 124032 | Profile 7 | 29.1 - 23.1 kft | 178 | |
| 124033 | 125045 | Run 7.1 | 23.0 kft | 175 | |
| 125233 | 125600 | Run 7.2 | 23.0 kft | 357 | |
| 125342 | | heimann | 23.0 kft | 359 | cal07 |
| 125409 | | nev | 23.0 kft | 359 | zero |
| 125613 | 125755 | Orbit 4 | 23.1 kft | 025 | 040M 50'rhd |
| 125818 | 125959 | Orbit 5 | 23.1 - 23.0 kft | 074 | 100M 50' rhd |
| 130215 | | ! | 23.0 kft | 053 | end of science |
| 135249 | | Land | -.06 kft | 212 | Cranfield |


Analysis chart valid 12 UTC WED 12 SEP 2007
GEOSTROPHIC WIND SCALE
IN KNOTS FOR ISOBARS AT 4 MB INTERVALS
POLAR STEREOGRAPHIC PROJECTION
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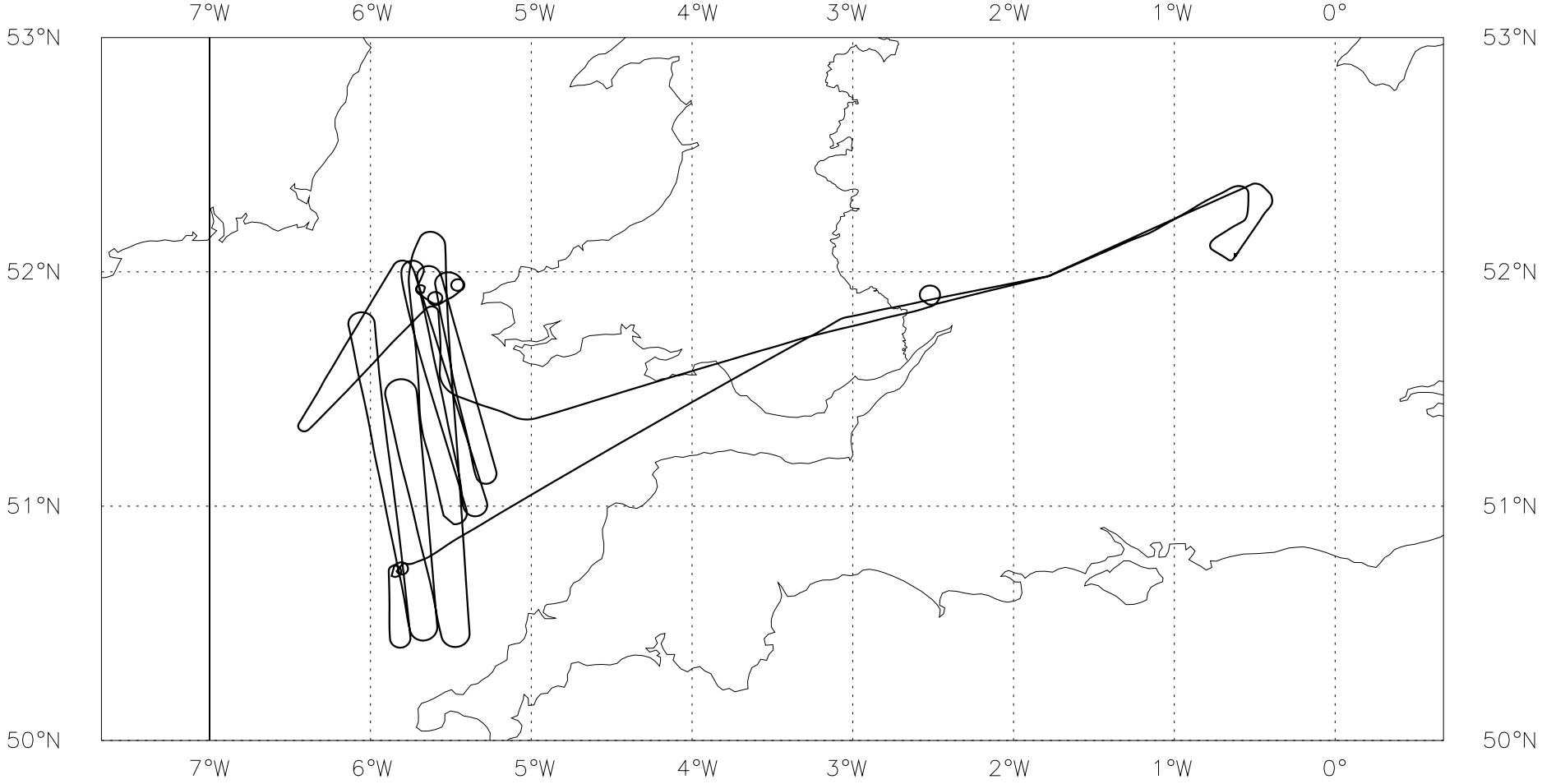
# B326 Track 12-SEP-07



# Sortie Brief
# Option 1: CAESAR Radiative properties of cirrus

**B326 12/09/07**
**T/O 09:30 L (0830Z)**

**Aim:**

The aim of this sortie is to determine the radiative properties of frontal or convective cirrus using multiple frequencies from the range of remote sensing instruments on the aircraft. For closure it is also important to determine the in-situ properties of the cloud and to make radiative measurements of the atmosphere above and below the cirrus. To obtain in-situ vertical distributions either perform profile ascents and descents, or a Lagrangian spiral descent if the cirrus is extensive and homogenous. Measurements should be made advecting with the wind, such that the same airmass is continuously measured.
Straight and level runs should be made below, above and in the cirrus. Over the sea a 100ft run will be required to measure the SST. Orbits are to be made below the cloud with SWS viewing upwards to determine the phase function of the ice particles.

**Satellite Overpasses:**
Metop (IASI) 1025Z
AQUA (AIRS) 1339Z

**Weather conditions:**

Convective, frontal or Lee wave cirrus. Clear sky below the cirrus in the measurement area is essential. Ideally the cirrus should not extend above 35,000ft.

**Locations:**

Over sea.

**Instruments required:**

Critical: ARIES, SWS, SID2, 2DC, Temp, Humidity (incl FWVS), AVAPS
Desirable: MARSS, TAFTS, SHIMS, CPI, SID1, FFSSP, 2DP, CIPs, Heimann, Core chem (auto mode OK)

# Mission scientist's debrief for CAESAR flight B326 on 12 Sept 2007
# S. M. Newman

**Summary:**
This CAESAR flight was conducted in conjunction with a MetOp overpass, with an Aqua overpass occurring shortly after the end of science. This science was complicated by extensive stratocumulus capped by an inversion near the surface which was persistent, and the cirrus was too high to get above. Nevertheless TAFTS worked well early in the sortie to give coincident cirrus measurements with ARIES.

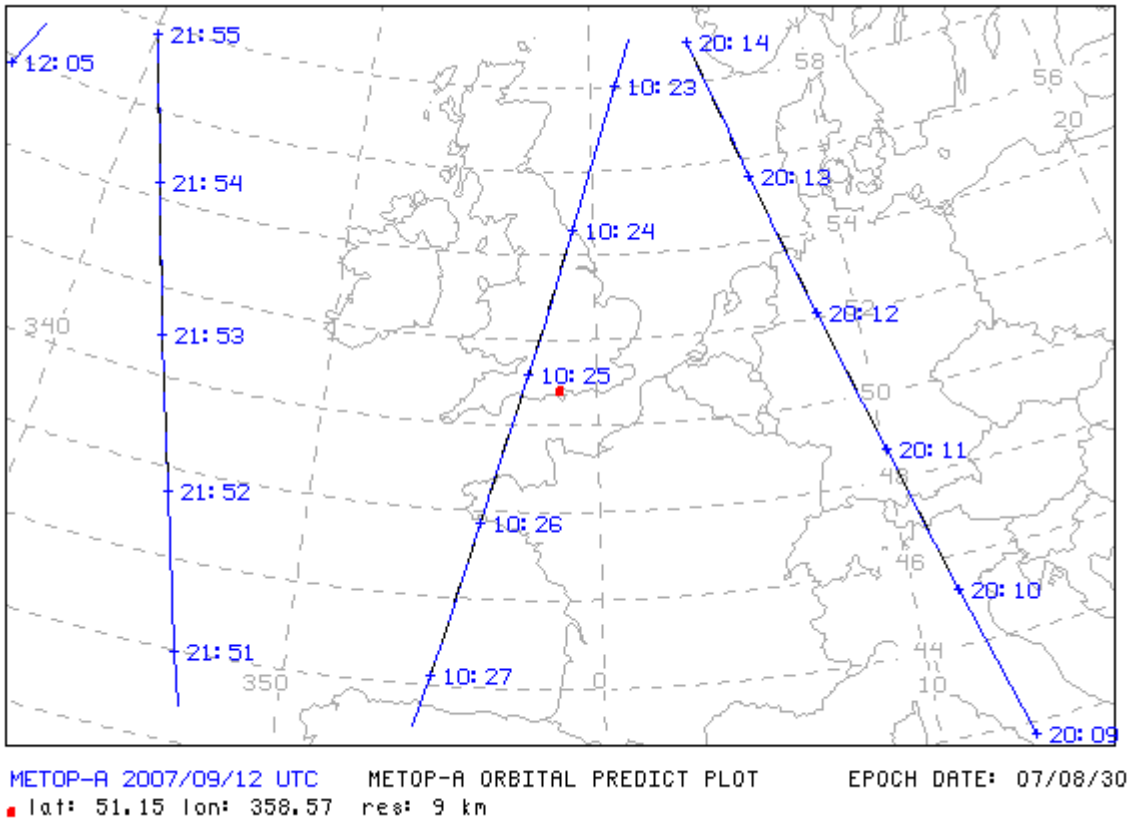
Although the forecast was for cirrus above an otherwise clear sky column, the actual conditions found in the area of operations was extensive Sc (between 5500-6500 ft on descent to the surface). An initial run at 100 feet for SST characterisation was carried out, but it became increasingly clear that there were very few clear slots in the Sc layer. It was decided to continue with the sortie on the basis of operating over uniform Sc (i.e. radiative transfer modelling will have to account for this as the emitting surface). Unfortunately there was not time to fit in a run just above the Sc for radiometric characterisation.
An ascent was made to FL230 where a reasonably uniform cirrus layer was identified with a base at around FL240. Over a large area the Sc was extensive below. A dropsonde was released at 1023Z in order to coincide with the MetOp overpass at 1025Z. It became apparent that the cirrus was better (or, at least, thicker) at the northern end of the operating area, close to the Irish FIR boundary. This persisted for the whole sortie despite prevailing winds from the north advecting the cloud south. A second run at FL230 was followed by three orbits, at 50º (twice) and 60º to get good SWS data.
A profile ascent to FL250 was made to operate just above cloud base; there was quite low thickness between the aircraft and the surface which meant the underlying Sc was visible at times. Low concentrations of small ice (100 μm) were seen. The aircraft weight with a heavy fuel load was not conducive to rapid ascent, but a run at FL300 was carried where it became evident that the highest cirrus was too high to reach (in excess of FL350). Further runs at FL330 were carried out above most of the cloud, with thinnish cirrus above. The northern portions of the runs exhibited extensive cirrus with Sc below, whereas in the south the cirrus was very thin or non-existent and the Sc was broken or there were even patches of clear sky to the surface. (Sc burn-off due to insolation under clear skies?) Two dropsondes were released at FL330. During the third run at this level the 146 actually intercepted its own contrail from the previous run.
A run at FL290 was made to be midway between cloud top and base; cloud physics reported bullet rosettes on the 2D probes. A final run-and-a-bit was carried out at FL230 below the cloud base, with two orbits at a bank angle of 50º.

**Instruments:**
SWS, ARIES and MARSS worked fine. Deimos data will need looking at. TAFTS worked at "5/10", with good data at the beginning of the sortie but deteriorating later. The flight manager reported that the Total Water heaters were failing.

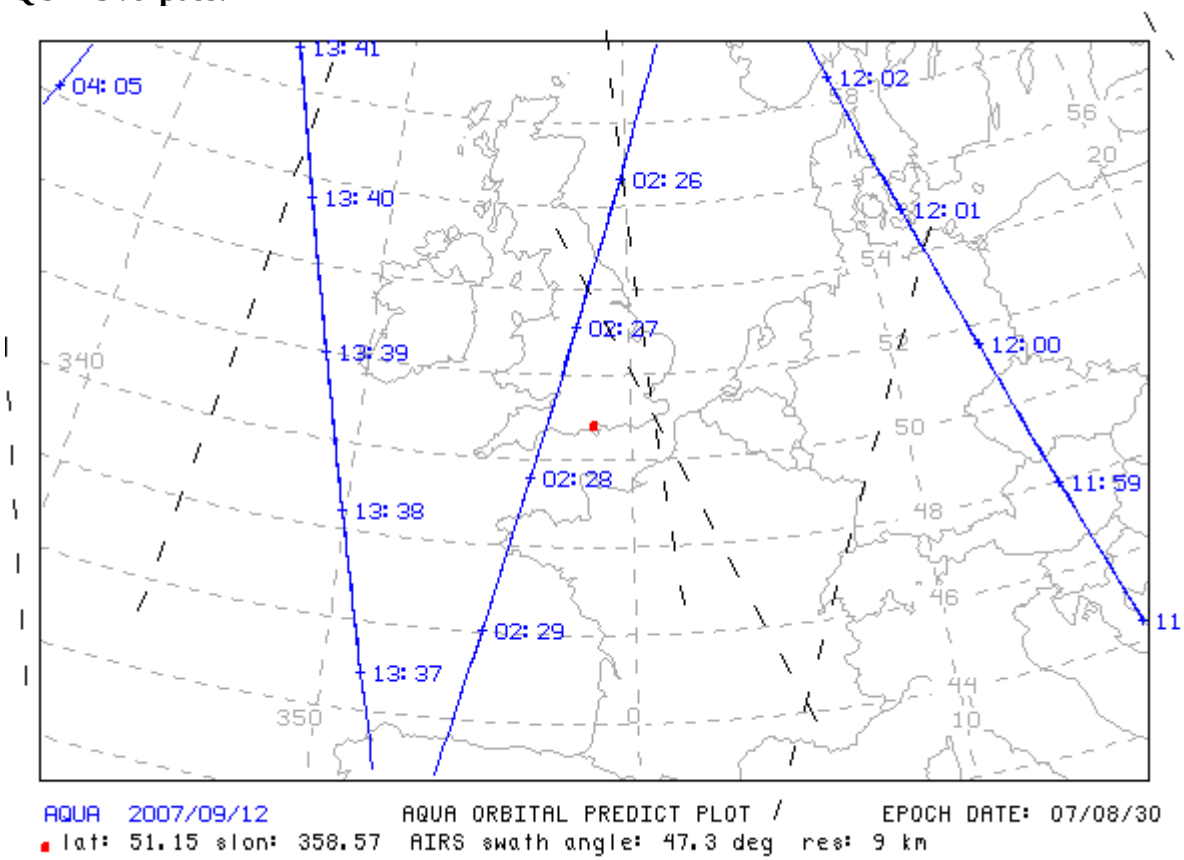
**B326 12/09/07**

| | **Time Z** | **Manoeuvre** | **Duration (min)** | **Total time (min)** |
|---|---|---|---|---|
| | | | | |
| 1 | 0830Z | Takeoff from Cranfield & Transit at appropriate level to enter operating area at min altitude | 50 | 50 |
| 2 | 0920Z | Straight and level run of 10 mins duration at 100 ft over sea only. | 10 | 60 |
| 3 | 0930Z | Profile ascent from min altitude to 1000ft below cirrus base at 1000ft/min (interrupted when necessary) | 35 | 95 |
| 4 | 1005Z | Fly 3 straight and level reciprocal runs 1000ft below cirrus, orientated across wind, each of 10 mins. Drop 1 sonde just before the **1025Z** overpass. | 35 | 130 |
| 5 | 1040Z | Fly two orbits below cloud at SZA (or max) banking angle | 10 | 140 |
| 6 | 1050Z | Profile ascent to 1000ft above cirrus base | 5 | 145 |
| 7 | 1055Z | Fly one straight and level run in cloud, orientated across wind, of 10 mins | 10 | 155 |
| 8 | 1105Z | Profile ascent to 1000ft below cirrus top | 10 | 165 |
| 9 | 1115Z | Fly one straight and level run in cloud, orientated across wind, of 10 mins | 10 | 175 |
| 10 | 1125Z | Profile ascent to 1000ft above cirrus top | 5 | 180 |
| 11 | 1130Z | Fly three straight and level reciprocal runs 1000ft above cirrus, orientated across wind, each of 10 mins. Drop between 1 and 2 sondes during one run, ideally during **1339Z** satellite overpass | 35 | 215 |
| *12* | **1205Z** | **EITHER** Perform a Lagrangian spiral descent at 2 ms-1, advecting with the wind, to 1000ft below cirrus base if operating area is extensive, then go to 16 | 25 | 240 |
| *12* | **1205Z** | **OR** Profile descent to level approx. half way between cloud top and base | 5 | 220 |
| *13* | 1210Z | Fly 1 or 2 straight and level runs 1000ft in cloud, orientated across wind, of 10 mins | 10 | 230 |
| *14* | 1220Z | Profile descent to 1000ft below cloud base | 10 | 240 |
| **15** | 1230Z | Fly one straight and level run 1000ft below cirrus base, orientated across wind, of 10 mins. | 10 | 250 |
| 16 | 1240Z | Perform one orbit at SZA (or max) banking angle | 5 | 255 |
| 17 | 1245Z | Profile descent to transit altitude | 10 | 265 |
| 18 | 1255Z | Transit to Cranfield | 50 | 315 |
| 19 | 1345Z | Land | | |

**Metop Overpass**




**AQUA Overpass:**



**Instrument operator instructions:**

**Nev**

- when out of cloud in a straight and level run zero it

**ARIES and SWS**

- Both instruments must point in the same direction (either zenith or nadir) as each other, except during cal. ARIES needs to tell SWS where it is pointing.
- Majority of time should be towards the cloud (or sea at 100ft) , however, still need some data pointing away to characterise the atmosphere above and below the cloud (e.g. ~2 of 10 min run)
- For orbits both instruments should view towards cloud for whole time
- When close to the area of operation (~15mins) take data during both transits

**ARIES**

- If it is still unstable for zenith views (shutter open) at high altitudes, it is better to get 1 min of good data in a 10 min run (with rest of time with shutter closed viewing cals or nadir) than all bad data – let SWS know which viewing direction and when.

**SWS**

- Continue to take data during the profiles
- Ensure that the signal does not saturate. Request extra orbits if necessary.

# Aircraft Scientist's Log

MISSION SCIENTIST: STUART NEWMAN CAESAR SW APPROACHES

Flight No B.326..... Date ..12/9/2007..... Page ..1..... of ..4.....



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 083235 | TAKE-OFF | | | | |
| 0840 | | | | | Moist on ascent to 820 mb then drier layer |
| 0848 | Transit | FL100 | 245 | 52°N 1°30'W | Wind 7ms$^{-1}$/331° T 3.5°C Td -18.9°C |
| 0907 | " | FL180 | 251 | 51°42 3°12'W | Over uniform Sc over S. Wales, patchy Cirrus and Contrails above |
| 091330 | P1 | FL180↓ | 252 | 51°30' 3°54' | |
| 092010 | " | FL113 | 253 | 51°18' 4°42' | Wind 6ms$^{-1}$/286° T 1.0°C Td -13°C Still uniform Sc below, patchy Ci above |
| 0925 | " | 6500ft | 291 | 51°24 5°12 | Tops of Sc |
| 0926 | " | 5500ft | 294 | 51°24 5°18 | Base of Sc; few marine Cu below |
| 0929 | " | 3000ft | 355 | 51°30 5°30 | In cloud at times but tenous |
| 093230 | | 50ft | | 51°48 5°30 | Calm sea state, no whitecaps |
| 093520 | R1.1 | 100ft | 220 | 51°42' 5°42' | Theimann ✕ 16.5°C |
| 094030 | " | " | 220 | 5°30 6°W | 9ms$^{-1}$/56° wind T 17.2°C Td 14°C |
| 094515 | end R1.1 | | | | Some breaks in Sc above, but few, still nearly 8/8 |
| 094710 | P2 | 100ft ↑ | | | 260 max PCASP |
| 095330 | | 6000ft | 030 | 51°42' 6°6' | In gap between cloud layers |
| 095430 | | 7000ft | 027 | 51°42' 6°W | Emerging from cloud tops T 8.6°C Td -15°C |
| | | | | | Strong inversion capping marine cloud Sc layer |
| 0959 | Interrupt | FL110 | | | Attempt for turn, Sc layer stretches as far as eye |
| 100039 | Resume | FL110↑ | | 51°54' 5°42' | Cirrus ahead to south looks more substantial so heading for that |
| 100820 | | FL186↑ | 165 | 51°24' 5°30' | Wind light 7ms$^{-1}$/327° T -14° Td -23°C Still quite dry at this level |
| 101340 | | FL240 | | 50° 59'8 | At or near base of surrounding cirrus patches so choosing this level for first run |
| 1016 | | | | | Revision: better choice FL230 below the base, heading north over Sc |
| 101752 | R2.1 | FL230 | 347 | 51°6' 5°24' | |
| 1019 | | | | | Variations in Ci thickness above |
| 1022 | | | | | Thicker above |

# Aircraft Scientist's Log

Flight No **B**.326..... Date 12/9/07..... Page 2 of 4



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 102300 | | | | | Dropsonde release |
| 1024 | | | | | Cameras switched to upt down 2D saw graupel briefly |
| 102630 | (R2.1) | FL230 | 347 | S1°48 S°36 | Thicker Ci above, uniform Sc below |
| 102750 | end R2.1 | " | | | Turning on reciprocal |
| 102945 | R2.2 | FL230 | 164 | S1°34 S°30 | Definitely thicker Ci at this northern end of area T=25°C Td=29°C |
| 1031 | | | | | 2D reports occaisonal particles |
| 1035 | (R2.2) | FL230 | 166 | S1°24 S°18 | Few breaks in Sc below to starboard, Ci looks a bit thinner above |
| 1037 | | | | | MARSS reports lower BTs for downwelling WV channels, consistent with thinner Ci |
| 103945 | end R2.2 | FL230 | | | Looks like Southerly edge of Ci coincides with end of run and turn |
| 104134 | R2.3 | FL230 | 342 | S1°8' S°18' | Significantly below cirrus + contrails just ahead |
| 105140 | end R2.3 | | | | |
| 105350 | 01 | FL230 | 240- | | SZA ~50° angle of bank 50° |
| 105530 | end 01 | | | | |
| 105649 | 02 | FL230 | 290- | | 50° bank, fairly uniform Ci by eye |
| 105835 | end 02 | " | | | SWS saturated, so repeating at 60° |
| 105930 | 03 | FL230 | | | Had to ease off bank angle mid-orb it |
| 1105~ | R3.1 | FL250 | 167 | S1°36' S°36 | In cloud run S-60 particles/l (can still see the Sc below) |
| 1114 | | | | | Cloud thinning both above + below |
| 111520 | end R3.1 | FL250 | | | |
| 111721 | P4 | FL250↑ | | | 2D reports we are in a clear slot |
| 112325 | Inter-upt | | | | |
| 112345 | R4.1 | FL300 | 355 | S1°30' S°42 | Restricted by air traffic to this level |
| 1125 | | FL300 | | | Some evidence of layering in cirrus, we appear to be nearer top |
| 1128 | | | | | Between layers here? Low concs of small ice 10/litre 100μm |
| 113045 | end 4.1 | | | | Run curtailed by air traffic |

# Aircraft Scientist's Log

Flight No B..326..... Date ..12/9/07..... Page ..3.. of ..4..



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 113349 | PS | FL300↑ | 178 | 51°54 5°30 | Some cloud above too high to reach, estimated FL350 or more |
| | | | | | TAFTS lost fringes during orbits and data quality was reduced |
| 113945 | end PS RS.1 | FL330 | 176 | 51°24 5°30 | |
| 1147 | | | | | We seem to be in clear air here and only broken Sc below |
| 114945 | end RS.1 | FL330 | | | This southerly end clear below + above |
| 115149 | RS.2 | FL330 | 346 | 50°24 5°30 | |
| 115630 | | | 348 | 50°48' 5°42 | Now in cirrus, Sc below with a few breaks |
| 115839 | | | | | Dropsonde release |
| 120000 | | FL330 | 348 | 51°12' 5°48' | Reasonably homogeneous Sc below |
| 1201 | | | | | 100 particles/cc 2D at times, variable |
| 1202 | | FL330 | | 51°8 5°48 | Only v. thin cirrus above Definitely best conditions here at north |
| 120503 | RS.3 | " | 174 | | |
| 120906 | | | | | Dropsonde release, still in cirrus |
| 1212 | | | | | Our own contrail visible just to right we will cross it |
| 121330 | | | | | In our contrail from previous run |
| 121420 | | | | | Out of contrail |
| 121522 | end RS.3 | FL330 | | | Not much cloud at this end |
| 122212 | RS.1 | FL290 | 348 | 50°54 5°48 | In-cloud run |
| 122430 | | " | | | Slightly broken Sc below, variable thickness Ci above |
| 1227 | | | | | 2D reports bullet rosettes on this run currently in thinnish patch |
| 1230 | | FL290 | 349 | 51°36°W | Blanket Sc below T -3° Td -40°C Winds 2ms⁻¹/345° |
| 123216 | end RS.1 | | | | |
| 123422 | PT | FL290↓ | 176 | 51°42' 5°54' | |
| 124031 | RT.1 | FL230 | 175 | 51°2 5°48 | Breaks in Sc below, seem to be below cirrus |
| 1245 | | | | | Largely clear below but cirrus above |

# Aircraft Scientist's Log

Flight No B326 Date 12/9/07 Page 4 of 4



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 1247 | (R7.1) | FL230 | 174 | 50°36 5°48 | Looks 100% clear below, patchy Ci + contrails above |
| 125042 | end R7.1 | FL230 | | | |
| 125232 | R7.2 | FL230 | 358 | 50°44 5°54 | Run north towards thicker cirrus |
| 125611 | 04 | FL230 | 040- | | 50° angle of bank (SZA 47.5°) |
| | 05 | " | | | saturation on SWS during this orbit but no fuel to repeat manoeuvre |
| 1300 | | | | | End of science |
| ~1353 | | | | | LAND Cranfield |
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# Aircraft Scientist's Log

Met
M/S 2

Flight No B326 Date 12/9/07 Page 1 of 1



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| | CAESAR Flight / SW Approaches | | | | |
| | → NW winds | | | | |
| | → Ci about 24k – 32k, largely cloud-free below expected | | | | |
| | | | | | |
| 8:32 | | | | Cranfield | T/O |
| 9:30 | | of the coast of S-Wales | | | → 7/8 to 8/8 Sc (strong inversion) |
| | | | | | ∴ forced to use Sc as "surface" |
| | | | | | → excellent Ci |
| | | | | | → Ci heights: ≈24k – ≈32k ft |
| | | | | | → all instruments OK |
| 10:20 | | | | | SONDE dropped (Metop overpass) ≈ coincidence ok |
| 11:22 | | 30k | | | multi-layered clouds appear |
| 11:45 | | 33k | | | 146 - contrails constantly at this level |
| 11:58 | | 33kft | | | SONDE |
| 12:09 | | | | | SONDE |
| 12:55 | | | | | no Sc below (max 1/8) during last 2 Orbits |
| 13:00 | | | | | End of Science |
| 13: | | | | Cranfield | Landing |
| | | | | | |
| | | | | | |
| | | | | | |

# CLOUD PHYSICS LOG Flight B 326

| Date: 07:15:00 | Operator: MAP | DRS Time: +0 | DAU1 Time: +0 | DAU2 Time: +0 | DAU3 Time: +0 | Aux1 Time: +0 | Aux2 Time: +0 | Page 1 of 1 |
|---|---|---|---|---|---|---|---|---|

| G.M.T | PCASP | | FFSSP | SID1 | SID2 | 2D2-C | | 2D2-P | | CIP25 | | | CIP100 | | | Habit | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc/cc | Mean R | Block TX | Count | Count | Conc/L | Max size | Conc/m3 | Max size | Conc m3 | Max size | LWC | Conc m3 | Max size | LWC | | |
| 08:40:00 | | | | | | | | | | | | | | | | | SID1 out of Sync restarted (B326-3.SRD) |
| 09:13:30 | 1 | 0.05 | 2 | | Noise | | | | | | | | | | | | Start Profile 1 from FL180 |
| 09:14:33 | 2 | 0.07 | | | Noise | | | | | | | | | | | | FL170 |
| 09:15:39 | 4 | 0.07 | | | Noise | | | | | | | | | | | | FL160 |
| 09:16:35 | 6 | 0.07 | | | Noise | | | | | | | | | | | | FL150 |
| 09:17:34 | 8 | 0.07 | | | Noise | | | | | | | | | | | | FL140 |
| 09:18:35 | 7 | 0.07 | | | Noise | | | | | | | | | | | | FL130 |
| 09:19:37 | 20 | 0.11 | | 10 | 2 | | | | | | | | | | | | FL120 |
| 09:20:35 | 40 | 0.10 | | 15 | 1 | | | | | | | | | | | | FL110 |
| 09:21:20 | 45 | 0.11 | | 20 | 2 | | | | | | | | | | | | FL100 Noise occ on FFSSP and PCASP |
| 09:22:23 | 45 | 0.10 | 3 | 20 | 2 | | | | | | | | | | | | FL090 |
| 09:23:24 | 50 | 0.08 | | 2 | 1 | | | | | | | | | | | | FL080 |
| 09:24:30 | 30 | 0.08 | 3 | 1 | 1 | | | | | | | | | | | | FL070 |
| 09:25:19 | 70 | 0.10 | 122 | 100 | 10 | | | | | | | | | | | | FL060 |
| 09:26:19 | 110 | 0.08 | 135 | 10 | 1 | | | | | | | | | | | | FL050 |
| 09:27:22 | 110 | 0.08 | 136 | 10 | 1 | | | | | | | | | | | | FL040 |
| 09:28:25 | 150 | 0.08 | | 15 | 1 | | | | | | | | | | | | FL030 |
| 09:29:23 | 150 | 0.08 | | 20 | 2 | | | | | | | | | | | | FL020 |
| 09:30:28 | 180 | 0.08 | | 20 | 1 | | | | | | | | | | | | FL010 |
| 09:32:33 | 350 | 0.08 | 137 | 40 | 1 | | | | | | | | | | | | End of Profile 1 @ 50’ |
| 09:35:21 | | | | | | | | | | | | | | | | | Start Run 1 @ 100’ |
| 09:36:00 | 330 | 0.08 | 139 | 20 | 1 | | | | | | | | | | | | |
| 09:38:00 | 260 | 0.08 | 141 | 15 | 1 | | | | | | | | | | | | Lots of noise on FFSSP and PCASP |
| 09:40:00 | 500 | 0.07 | 142 | 15 | 1 | | | | | | | | | | | | |
| 09:42:00 | 300 | 0.07 | 143 | 15 | 1 | | | | | | | | | | | | |
| 09:44:00 | 285 | 0.07 | 146 | 15 | 1 | | | | | | | | | | | | |
| 09:45:10 | | | | | | | | | | | | | | | | | End of Run 1 |
| 09:47:20 | | | | | | | | | | | | | | | | | Start Profile 2 from 100’ |
| 09:48:49 | 260 | 0.08 | | | | | | | | | | | | | | | FL010 |
| 09:49:55 | 120 | 0.08 | 155 | 10 | 1 | | | | | | | | | | | | FL020 |
| 09:51:46 | 90 | 0.08 | 157 | 10 | 1 | | | | | | | | | | | | FL040 |
| 09:52:53 | 70 | 0.08 | 158 | 10 | 1 | | | | | | | | | | | | FL050 |
| 09:53:57 | 60 | 0.08 | 234 | 1000 | 2000 | | | | | | | | | | | | FL060 |
| 09:54:52 | 20 | 0.08 | 429 | 10 | 20 | | | | | | | | | | | | FL070 |
| 09:55:54 | 10 | 0.07 | | | Noise | | | | | | | | | | | | FL080 |
| 09:56:57 | 10 | 0.07 | | 5 | 2 | | | | | | | | | | | | FL090 |
| 09:57:56 | 10 | 0.07 | | 5 | Noise | | | | | | | | | | | | FL100 |
| 09:59:04 | 5 | 0.07 | | | | | | | | | | | | | | | FL110 |
| 10:01:48 | 4 | 0.07 | | | Noise | | | | | | | | | | | | FL120 |
| 10:02:50 | 3 | 0.07 | | | | | | | | | | | | | | | FL130 |
| 10:03:50 | 4 | 0.07 | | 3 | 1 | | | | | | | | | | | | FL140 |
| 10:04:50 | 4 | 0.08 | | | | | | | | | | | | | | | FL150 |
| 10:05:43 | 4 | 0.07 | | | | | | | | | | | | | | | FL160 |

| PCASP Reference Volts = 9.3V | FFSSP Reference Volts = 3.2V | 2D2-C End element 1 voltage = -1.4V | CIP25 End element 1 voltage = 0.17V | CIP100 End element 1 voltage = n/a |
|---|---|---|---|---|
| PCASP Flow rate = 1.0 cc/sec | | 2D2-C End element 32 voltage = -1.0V | CIP25 End element 64 voltage = 0.06V | CIP100 End element 64 voltage = n/a |
|  | SID2 Laser power = 12mw | 2D2-P End element 1 voltage = -3.2V | | |

# CLOUD PHYSICS LOG Flight B 326

| Date: 07:15:00 | Operator: MAP | DRS Time: +0 | DAU1 Time: +0 | DAU2 Time: +0 | DAU3 Time: +0 | Aux1 Time: +0 | Aux2 Time: +0 | Page 2 of 2 |
|---|---|---|---|---|---|---|---|---|

| G.M.T | PCASP | | FFSSP | SID1 | SID2 | 2D2-C | | 2D2-P | | CIP25 | | | CIP100 | | | Habit | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc/cc | Mean R | Block TX | Count | Count | Conc/L | Max size | Conc/m3 | Max size | Conc m3 | Max size | LWC | Conc m3 | Max size | LWC | | |
| 10:06:50 | 2 | 0.06 | 429 | | | | | | | | | | | | | | FL170 |
| 10:07:51 | 5 | 0.05 | | | | | | | | | | | | | | | FL180 |
| 10:08:53 | 3 | 0.07 | | | | | | | | | | | | | | | FL190 |
| 10:09:54 | 3 | 0.07 | | | | | | | | | | | | | | | FL200 |
| 10:10:54 | 4 | 0.08 | | 1 | | | | | | | | | | | | | FL210 |
| 10:11:51 | 2 | 0.08 | | | | | | | | | | | | | | | FL220 |
| 10:12:57 | 4 | 0.06 | | | | | | | | | | | | | | | FL230 |
| 10:13:55 | 3 | 0.08 | | | | | | | | | | | | | | | End of Profile 2 @ FL240 |
| 10:17:54 | | | | | | | | | | | | | | | | | Start Run 2.1 @ FL230 |
| 10:18:00 | 3 | 0.08 | 430 | 2 | 1 | | | | | | | | | | | | |
| 10:20:00 | 3 | 0.07 | | 2 | 1 | | | | | | | | | | | | |
| 10:22:00 | 5 | 0.07 | | 3 | 2 | 1 | 200 | | | | | | | | | 10 | |
| 10:24:00 | 4 | 0.06 | | 1 | 3 | | | | | | | | | | | | |
| 10:26:00 | 5 | 0.06 | | 10 | 10 | 5 | 150 | 25 | | | | | | | | 10 | |
| 10:27:54 | | | | | | | | | | | | | | | | | End of Run 2.1 @ FL230 |
| 10:29:50 | | | | | | | | | | | | | | | | | Start Run 2.2 @ FL230 |
| 10:30:00 | 5 | 0.13 | 432 | 10 | 10 | 15 | 150 | 15 | 100 | | | | | | | 10 | |
| 10:32:00 | 35 | 0.12 | 433 | 20 | 5 | 2 | 275 | 800 | 200 | | | | | | | 10 | |
| 10:34:00 | 2 | 0.06 | | 10 | 1 | 35 | 225 | 100 | 200 | | | | | | | 10 | |
| 10:36:00 | 1 | 0.05 | 434 | 1 | 1 | | | | | | | | | | | | |
| 10:38:00 | 2 | 0.07 | | 1 | | | | | | | | | | | | | |
| 10:39:45 | | | | | | | | | | | | | | | | | End of Run 2.2 |
| 10:41:36 | | | | | | | | | | | | | | | | | Start Run 2.3 @ FL230 |
| 10:42:00 | 3 | 0.07 | | 1 | 1 | | | | | | | | | | | | |
| 10:44:00 | 1 | 0.06 | | 1 | | | | Noise | | | | | | | | | |
| 10:46:00 | 3 | 0.08 | | 10 | 10 | 10 | 250 | Noise | | | | | | | | 10 | |
| 10:48:00 | 2 | 0.06 | | 1 | Noise | | | Noise | | | | | | | | | |
| 10:50:00 | 8 | 0.08 | | 50 | Noise | 20 | 250 | Noise | | | | | | | | | |
| 10:51:40 | | | | | | | | | | | | | | | | | End of Run 2.3 |
| 10:53:52 | | | | | | | | | | | | | | | | | Start Orbits |
| 11:00:53 | | | | | | | | | | | | | | | | | End of Orbits |
| 11:03:32 | 3 | 0.08 | 443 | 10 | 10 | 15 | 200 | Noise | | | | | | | | 10 | Start Profile 3 from FL230 |
| 11:05:30 | 8 | 0.07 | 444 | 20 | 20 | 12 | 200 | Noise | | | | | | | | 10 | FL240 |
| 11:05:27 | 8 | 0.10 | | 20 | 10 | 15 | 200 | Noise | | | | | | | | 10 | End of Profile 3 & Start Run 3.1 @ FL250 |
| 11:06:00 | 4 | 0.25 | 445 | 20 | 5 | 15 | 200 | Noise | | | | | | | | 10 | |
| 11:08:00 | 5 | 0.07 | 446 | 20 | 2 | 30 | 300 | Noise | | | | | | | | 10 | |
| 11:10:00 | 5 | 0.07 | 447 | 100 | 10 | 35 | 300 | Noise | | | | | | | | 10 | |
| 11:12:00 | 5 | 0.17 | 449 | 80 | 40 | 10 | 400 | Noise | | | | | | | | 10 | |
| 11:14:00 | 2 | 0.07 | 450 | 30 | 3 | | | | | | | | | | | | |
| 11:15:22 | | | | | | | | | | | | | | | | | End of Run 3.1 |
| 11:17:24 | | | | | | | | | | | | | | | | | Start Profile 4 from FL250 |
| 11:18:33 | 2 | 0.05 | 451 | 15 | 1 | 3 | | | | | | | | | | | FL260 |
| 11:19:35 | 8 | 0.14 | 452 | 10 | 2 | 2 | 350 | Noise | | | | | | | | | FL270 |

| PCASP Reference Volts = 9.3V | FFSSP Reference Volts = 3.2V | 2D2-C End element 1 voltage = -1.4V | CIP25 End element 1 voltage = 0.17V | CIP100 End element 1 voltage = n/a |
|---|---|---|---|---|
| PCASP Flow rate = 1.0 cc/sec | | 2D2-C End element 32 voltage = -1.0V | CIP25 End element 64 voltage = 0.06V | CIP100 End element 64 voltage = n/a |
|  | SID2 Laser power = 12mw | 2D2-P End element 1 voltage = -3.2V | | |

# CLOUD PHYSICS LOG Flight B 326

| Date: 07:15:00 | Operator: MAP | DRS Time: +0 | DAU1 Time: +0 | DAU2 Time: +0 | DAU3 Time: +0 | Aux1 Time: +0 | Aux2 Time: +0 | Page 3 of 3 |
|---|---|---|---|---|---|---|---|---|

| G.M.T | PCASP | | FFSSP | SID1 | SID2 | 2D2-C | | 2D2-P | | CIP25 | | | CIP100 | | | Habit | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc/cc | Mean R | Block TX | Count | Count | Conc/L | Max size | Conc/m3 | Max size | Conc m3 | Max size | LWC | Conc m3 | Max size | LWC | | |
| 11:20:36 | 1 | 0.06 | 452 | 15 | 2 | 10 | 175 | Noise | | | | | | | | 10 | FL280 |
| 11:21:45 | 20 | 0.17 | 453 | 20 | 5 | 15 | 300 | Noise | | | | | | | | 10 | FL290 |
| 11:23:25 | 1 | 0.07 | 454 | 100 | 10 | 70 | 175 | Noise | | | | | | | | 10 | End of Profile 4 & Start Run 4.1 @ FL300 |
| 11:24:00 | 1 | 0.06 | 455 | 10 | 10 | 6 | 100 | Noise | | | | | | | | 11 | |
| 11:26:00 | 1 | 0.07 | 456 | 10 | 15 | 20 | 100 | Noise | | | | | | | | 11 | |
| 11:28:00 | 1 | 0.13 | 457 | 20 | 10 | 15 | 100 | Noise | | | | | | | | 11 | |
| 11:30:00 | 10 | 0.07 | 458 | 5 | Noise | 3 | 75 | Noise | | | | | | | | 11 | |
| 11:30:45 | | | | | | | | | | | | | | | | | End of Run 4.1 |
| 11:33:52 | | | | | | | | | | | | | | | | | Start Profile 5 from FL300 |
| 11:35:30 | 10 | 0.11 | 461 | 150 | 60 | 45 | 100 | Noise | | | | | | | | 11 | FL310 |
| 11:37:45 | 1 | 0.09 | 463 | 100 | 10 | 35 | 125 | Noise | | | | | | | | 10 | FL320 |
| 11:39:49 | | | | | | | | | | | | | | | | | End of Profile 5 & Start Run 5.1 @ FL330 |
| 11:40:00 | 5 | 0.07 | 464 | 20 | 5 | 15 | 175 | Noise | | | | | | | | 10 | |
| 11:42:00 | 1 | 0.15 | 465 | 200 | 10 | 15 | 150 | Noise | | | | | | | | 10 | |
| 11:44:00 | 5 | 0.11 | 467 | 80 | 8 | 1 | | | | | | | | | | | |
| 11:46:00 | 2 | 0.05 | | 2 | 1 | | | Noise | | | | | | | | | |
| 11:48:00 | 1 | 0.04 | | | | | | Noise | | | | | | | | | |
| 11:49:52 | | | | | | | | | | | | | | | | | End of Run 5.1 |
| 11:51:50 | | | | | | | | | | | | | | | | | Start Run 5.2 @ FL330 |
| 11:52:00 | 1 | 0.02 | | | | | | Noise | | | | | | | | | |
| 11:54:00 | | | | | | | | Noise | | | | | | | | | |
| 11:56:00 | 1 | 0.05 | 468 | 1 | 1 | 1 | | Noise | | | | | | | | | |
| 11:58:00 | 6 | 0.03 | | 5 | 2 | 5 | 100 | Noise | | | | | | | | 11 | |
| 12:00:00 | 2 | 0.12 | 472 | 100 | 10 | 3 | 275 | Noise | | | | | | | | 10 | |
| 12:02:00 | 1 | 0.12 | 473 | 10 | 10 | 30 | 100 | Noise | | | | | | | | 11 | |
| 12:02:49 | | | | | | | | | | | | | | | | | End of Run 5.2 |
| 12:05:06 | | | | | | | | | | | | | | | | | Start Run 5.3 @ FL330 |
| 12:06:00 | 5 | 0.06 | 474 | 20 | 10 | 35 | 100 | Noise | | | | | | | | 11 | |
| 12:08:00 | 5 | 0.06 | 476 | 100 | 10 | 60 | 200 | Noise | | | | | | | | 10 | |
| 12:10:00 | 5 | 0.04 | 477 | 10 | 2 | 1 | 200 | Noise | | | | | | | | 10 | |
| 12:12:00 | 10 | 0.06 | 478 | 5 | | | | | | | | | | | | | |
| 12:14:00 | 10 | 0.20 | 479 | 100 | 10 | 1 | | Noise | | | | | | | | | Our own contrail |
| 12:15:22 | | | | | | | | | | | | | | | | | End of Run 5.3 |
| 12:17:47 | | | | | | | | | | | | | | | | | Start Profile 6 from FL330 |
| 12:18:55 | 20 | 0.06 | 480 | 2 | 1 | | | Noise | | | | | | | | | FL320 |
| 12:20:03 | 20 | 0.07 | | 2 | 1 | | | Noise | | | | | | | | | FL310 |
| 12:21:03 | 30 | 0.06 | | 5 | 5 | 2 | 600 | Noise | | | | | | | | 4 | FL300 |
| 12:22:15 | | | | | | | | | | | | | | | | | End of Profile 6 & Start Run 6.1 @ FL290 |
| 12:23:00 | 30 | 0.06 | 481 | 15 | 1 | 3 | 600 | Noise | | | | | | | | 4 | |
| 12:25:00 | 40 | 0.06 | 486 | 30 | 1 | 3 | 600 | Noise | | | | | | | | 4 | |
| 12:27:00 | 45 | 0.10 | | 10 | 1 | 10 | 250 | Noise | | | | | | | | 10 | |
| 12:29:00 | 30 | 0.10 | 488 | 70 | 10 | 15 | 100 | Noise | | | | | | | | 11 | |
| 12:31:00 | 35 | 0.06 | 489 | 5 | Noise | | | Noise | | | | | | | | | |

| PCASP Reference Volts = 9.3V | FFSSP Reference Volts = 3.2V | 2D2-C End element 1 voltage = -1.4V | CIP25 End element 1 voltage = 0.17V | CIP100 End element 1 voltage = n/a |
|---|---|---|---|---|
| PCASP Flow rate = 1.0 cc/sec | | 2D2-C End element 32 voltage = -1.0V | CIP25 End element 64 voltage = 0.06V | CIP100 End element 64 voltage = n/a |
|  | SID2 Laser power = 12mw | 2D2-P End element 1 voltage = -3.2V | | |

# CLOUD PHYSICS LOG Flight B 326

| Date: 07:15:00 | Operator: MAP | DRS Time: +0 | DAU1 Time: +0 | DAU2 Time: +0 | DAU3 Time: +0 | Aux1 Time: +0 | Aux2 Time: +0 | Page 4 of 4 |
|---|---|---|---|---|---|---|---|---|

| G.M.T | PCASP | | FFSSP | SID1 | SID2 | 2D2-C | | 2D2-P | | CIP25 | | | CIP100 | | | Habit | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc/cc | Mean R | Block TX | Count | Count | Conc/L | Max size | Conc/m3 | Max size | Conc m3 | Max size | LWC | Conc m3 | Max size | LWC | | |
| 12:32:18 | | | | | | | | | | | | | | | | | End of Run 6.1 |
| 12:34:30 | | | | | | | | | | | | | | | | | Start Profile 7 from FL290 |
| 12:35:42 | 10 | 0.06 | 490 | 10 | 10 | 25 | 150 | Noise | | | | | | | | 10 | FL280 |
| 12:36:30 | 5 | 0.08 | | 40 | 10 | 10 | 175 | Noise | | | | | | | | 10 | FL270 |
| 12:37:29 | 20 | 0.06 | 491 | 10 | 10 | 7 | 75 | Noise | | | | | | | | 11 | FL260 |
| 12:38:27 | 25 | 0.06 | 492 | 10 | 3 | 5 | 200 | Noise | | | | | | | | 10 | FL250 |
| 12:39:30 | 20 | 0.11 | 493 | 15 | 2 | 25 | 500 | Noise | | | | | | | | 10 | FL240 |
| 12:40:32 | | | | | | | | | | | | | | | | | End of Profile 7 & Start Run 7.1 @ FL230 |
| 12:41:00 | 10 | 0.06 | | 1 | | | | Noise | | | | | | | | | |
| 12:43:00 | 8 | 0.07 | | 1 | 1 | | | Noise | | | | | | | | | |
| 12:45:00 | 4 | 0.11 | 494 | 40 | 3 | 1 | 300 | Noise | | | | | | | | 10 | |
| 12:47:00 | 4 | 0.06 | | 1 | | | | Noise | | | | | | | | | |
| 12:49:00 | 2 | 0.06 | | 2 | | | | Noise | | | | | | | | | |
| 12:50:44 | | | | | | | | | | | | | | | | | End of Run 7.1 |
| 12:52:34 | | | | | | | | | | | | | | | | | Start Run 7.2 @ FL230 |
| 12:53:00 | 2 | 0.06 | 495 | 1 | 1 | | | Noise | | | | | | | | | |
| 12:55:00 | 2 | 0.06 | | 2 | 1 | | | Noise | | | | | | | | | |
| 12:55:45 | | | | | | | | | | | | | | | | | End of Run 7.2 |
| 12:56:12 | | | | | | | | | | | | | | | | | Start Orbits |
| 13:00:00 | | | | | | | | | | | | | | | | | End Orbits |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | Noise problems on PCASP and FFFSP on low level run at start due to Deimos<br>SID2 noisy at times<br>2D2-P noisy at high altitudes | | | | | | | | | | | | | | | | |

| PCASP Reference Volts = 9.3V | FFSSP Reference Volts = 3.2V | 2D2-C End element 1 voltage = -1.4V | CIP25 End element 1 voltage = 0.17V | CIP100 End element 1 voltage = n/a |
|---|---|---|---|---|
| PCASP Flow rate = 1.0 cc/sec | | 2D2-C End element 32 voltage = -1.0V | CIP25 End element 64 voltage = 0.06V | CIP100 End element 64 voltage = n/a |
|  | SID2 Laser power = 12mw | 2D2-P End element 1 voltage = -3.2V | | |

# FAAM Dropsonde Flight Log

| **Flight No.** | B326 | **Date** | 12 Sep 2007 | **Operator** | S Devereau | **Page No.** | 1 of 1 |
|---|---|---|---|---|---|---|---|

| **GMT** | **Sonde No.** | **Event** *eg land, splashdown* | **Comments** *pressure hPa, T deg C, RH %, wind direction deg, wind speed m/s,* ***longitude, latitude****, height m* |
|---|---|---|---|
| 10:23:03 | 1 | Launch | 407.60 -25.30 59.49 305.90 7.80 -15.10 -5.584563 51.568561 7400.60 |
| | | | Late parachute deployment, late launch detect |
| 10:30:22 | 1 | Splashdown | 103022.39 1029.10 16.06 90.86 17.77 4.41 -10.94 -5.583786 51.562470 -280.64 |
| | | | |
| 11:58:42 | 2 | Launch | 115842.00 261.70 -49.60 107.08 336.10 7.50 -17.10 -5.771700 51.077800 10065.10 |
| | | | Good drop |
| 12:10:43 | 2 | Splashdown | 1029.37 16.36 999.00 49.13 3.66 -10.01 -5.760262 51.070537 99999.00 |
| | | | |
| 12:09:09 | 3 | Launch | 261.60 -49.60 105.87 198.70 2.90 -16.50 -5.659600 51.093600 10068.20 |
| | | | Good drop |
| 12:21:28 | 3 | Splashdown | 1029.38 16.65 86.27 43.08 3.45 -10.46 -5.646922 51.082305 99999.00 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

B326_SWS_SHIMS_EventLog.txt

```
07:04:35.20  ---      -     -     -     -
07:04:35.20  ---      -     -     -     -  +++ SOFTWARE START/RESTART +++
07:04:35.20  ---      -     -     -     -  +++ hh:mm:ss.ff / Instr / Posn / Period /
                                              tVIS/ tNIR / Comment +++
07:04:35.20  ---      -     -     -     -  +++ Flight no. B326
07:04:35.20  ---      -     -     -     -
07:04:50.42  SWS      -     -     -     -  Initialization: VIS OK NIR OK
07:05:07.27  USH      -     -     -     -  Initialization: VIS OK NIR OK
07:05:18.20  LSH      -     -     -     -  Initialization: VIS OK NIR OK
07:05:40.24  SWS      -   100     -     -  Sample period changed from 500ms to 100ms.
07:05:44.43  USH      -   100     -     -  Sample period changed from 500ms to 100ms.
07:05:47.32  LSH      -   100     -     -  Sample period changed from 500ms to 100ms.
07:06:12.50  SWS      -     -    50     -  VIS int.time changed from 5ms to 50ms.
07:06:16.66  SWS      -     -     -    50  NIR int.time changed from 5ms to 50ms.
07:06:21.34  USH      -     -   100     -  VIS int.time changed from 5ms to 100ms.
07:06:25.10  USH      -     -     -   100  NIR int.time changed from 5ms to 100ms.
07:06:29.07  LSH      -     -   500     -  VIS int.time changed from 5ms to 500ms.
07:06:32.36  LSH      -     -     -   500  NIR int.time changed from 5ms to 500ms.
07:06:40.05  SWS      -     -     -     -  Dark measurement started.
07:06:40.05  LSH      -     -     -     -  Dark measurement started.
07:06:40.06  USH      -     -     -     -  Dark measurement started.
07:06:41.90  SWS      -     -     -     -  Idling
07:06:42.49  USH      -     -     -     -  Idling
07:06:44.67  ---      -     -     -     -  Reset shutters.
07:06:46.22  LSH      -     -     -     -  Idling
07:06:49.15  USH      -     -     -     -  Dark measurement started.
07:06:49.17  LSH      -     -     -     -  Dark measurement started.
07:06:49.17  SWS      -     -     -     -  Dark measurement started.
07:06:50.49  SWS      -     -     -     -  Idling
07:06:50.60  USH      -     -     -     -  Idling
07:06:54.81  LSH      -     -     -     -  Idling
07:07:28.96  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
07:07:28.97  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
07:07:28.97  USH      -     -     -     -  Manual scene sampling started - Not Recording!
07:08:26.81  USH      -     -     -     -  Dark measurement started.
07:08:26.95  SWS      -     -     -     -  Dark measurement started.
07:08:27.63  LSH      -     -     -     -  Dark measurement started.
07:08:27.95  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
07:08:28.24  USH      -     -     -     -  Manual scene sampling started - Not Recording!
07:08:33.06  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
07:08:45.53  LSH      -     -     -     -  Dark measurement started.
07:08:50.97  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
07:08:52.94  ---      -     -     -     -  Reset shutters.
07:08:59.35  LSH      -     -     -     -  Dark measurement started.
07:09:04.77  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
07:09:08.26  USH      -     -     -     -  Dark measurement started.
07:09:09.69  USH      -     -     -     -  Manual scene sampling started - Not Recording!
07:09:23.57  USH      -     -     -     -  Idling
07:09:23.66  SWS      -     -     -     -  Idling
07:09:24.40  LSH      -     -     -     -  Idling
07:09:39.90  SWS      -     -     -     -  Dark measurement started.
07:09:39.91  LSH      -     -     -     -  Dark measurement started.
07:09:39.92  USH      -     -     -     -  Dark measurement started.
07:09:40.84  SWS      -     -     -     -  Idling
07:09:41.75  USH      -     -     -     -  Idling
07:09:45.55  LSH      -     -     -     -  Idling
07:09:47.29  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
07:09:47.29  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
07:09:47.30  USH      -     -     -     -  Manual scene sampling started - Not Recording!
07:10:00.34  USH      -     -     -     -  Manual scene recording started.
07:10:00.65  SWS      -     -     -     -  Manual scene recording started.
07:10:00.98  LSH      -     -     -     -  Manual scene recording started.
07:10:14.50  SWS      -     -     -     -  Idling
07:10:14.59  USH      -     -     -     -  Idling
07:10:14.78  LSH      -     -     -     -  Idling
07:10:18.06  USH      -     -     -     -  Dark measurement started.
07:10:18.06  LSH      -     -     -     -  Dark measurement started.
```

| | | | | | | |
|---|---|---|---|---|---|---|
| 07:10:18.07 | SWS | - | - | - | - | Dark measurement started. |
| 07:10:19.40 | SWS | - | - | - | - | Idling |
| 07:10:19.50 | USH | - | - | - | - | Idling |
| 07:10:23.71 | LSH | - | - | - | - | Idling |
| 07:10:26.47 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 07:10:26.47 | LSH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 07:10:26.48 | USH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 08:21:18.10 | USH | - | - | - | - | Idling |
| 08:21:18.21 | SWS | - | - | - | - | Idling |
| 08:21:18.52 | LSH | - | - | - | - | Idling |
| 08:21:20.75 | --- | - | - | - | - | Reset shutters. |
| 08:21:24.79 | USH | - | - | - | - | Dark measurement started. |
| 08:21:26.22 | USH | - | - | - | - | Idling |
| 08:21:29.17 | SWS | - | - | - | - | Dark measurement started. |
| 08:21:29.17 | LSH | - | - | - | - | Dark measurement started. |
| 08:21:29.19 | USH | - | - | - | - | Dark measurement started. |
| 08:21:30.10 | SWS | - | - | - | - | Idling |
| 08:21:31.00 | USH | - | - | - | - | Idling |
| 08:21:34.79 | LSH | - | - | - | - | Idling |
| 08:21:45.03 | LSH | - | - | - | - | Dark measurement started. |
| 08:21:50.47 | LSH | - | - | - | - | Idling |
| 08:22:14.94 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 08:22:14.94 | LSH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 08:22:14.95 | USH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 08:39:06.07 | LSH | - | - | 200 | - | VIS int.time changed from 500ms to 200ms. |
| 08:39:11.33 | LSH | - | - | - | 200 | NIR int.time changed from 500ms to 200ms. |
| 08:39:13.72 | LSH | - | - | - | - | Dark measurement started. |
| 08:39:16.15 | LSH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 08:59:18.43 | SWS | - | - | 100 | - | VIS int.time changed from 50ms to 100ms. |
| 08:59:22.38 | SWS | - | - | - | 100 | NIR int.time changed from 50ms to 100ms. |
| 08:59:27.35 | SWS | - | - | - | - | Dark measurement started. |
| 08:59:28.78 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:00:50.78 | LSH | - | - | 100 | - | VIS int.time changed from 200ms to 100ms. |
| 09:01:00.19 | LSH | - | - | 200 | - | VIS int.time changed from 100ms to 200ms. |
| 09:01:03.71 | LSH | - | - | - | - | Dark measurement started. |
| 09:01:06.13 | LSH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:01:10.76 | USH | - | - | - | - | Dark measurement started. |
| 09:01:12.19 | USH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:01:14.84 | SWS | - | - | - | - | Dark measurement started. |
| 09:01:16.27 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:09:18.48 | SWS | - | - | 200 | - | VIS int.time changed from 100ms to 200ms. |
| 09:09:21.00 | SWS | - | - | - | 200 | NIR int.time changed from 100ms to 200ms. |
| 09:09:31.23 | LSH | - | - | 100 | - | VIS int.time changed from 200ms to 100ms. |
| 09:09:34.62 | LSH | - | - | - | 100 | NIR int.time changed from 200ms to 100ms. |
| 09:10:15.33 | SWS | - | - | 100 | - | VIS int.time changed from 200ms to 100ms. |
| 09:10:17.96 | SWS | - | - | - | 100 | NIR int.time changed from 200ms to 100ms. |
| 09:10:23.12 | SWS | - | - | - | - | Dark measurement started. |
| 09:10:23.36 | LSH | - | - | - | - | Dark measurement started. |
| 09:10:23.37 | USH | - | - | - | - | Dark measurement started. |
| 09:10:24.57 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:10:24.84 | LSH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:10:25.00 | USH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:12:18.73 | SWS | 6F | - | - | - | Telescope position set to 6F |
| 09:12:25.96 | USH | - | - | - | - | Dark measurement started. |
| 09:12:26.08 | SWS | - | - | - | - | Dark measurement started. |
| 09:12:26.38 | LSH | - | - | - | - | Dark measurement started. |
| 09:12:27.39 | USH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:12:27.58 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:12:27.81 | LSH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:12:30.28 | SWS | - | - | - | - | Manual scene recording started. |
| 09:12:30.49 | LSH | - | - | - | - | Manual scene recording started. |
| 09:12:30.73 | USH | - | - | - | - | Manual scene recording started. |
| 09:12:46.39 | --- | - | - | - | - | *** Start |
| 09:13:32.10 | --- | - | - | - | - | *** Start P1 descent, from FL180 |
| 09:16:06.62 | --- | - | - | - | - | *** cirrus above, Sc below |
| 09:25:33.53 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 09:25:36.58 | SWS | - | - | 50 | - | VIS int.time changed from 100ms to 50ms. |
| 09:25:39.32 | SWS | - | - | - | 50 | NIR int.time changed from 100ms to 50ms. |
| 09:25:40.97 | SWS | - | - | - | - | Dark measurement started. |

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09:25:41.93  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
09:25:43.85  SWS      -     -     -     -  Manual scene recording started.
09:26:27.85  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
09:26:31.32  LSH      -     -   200     -  VIS int.time changed from 100ms to 200ms.
09:26:34.87  LSH      -     -     -   200  NIR int.time changed from 100ms to 200ms.
09:26:36.59  LSH      -     -     -     -  Dark measurement started.
09:26:39.03  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
09:26:40.67  LSH      -     -     -     -  Manual scene recording started.
09:32:04.42  ---      -     -     -     -  *** End profile
09:32:39.95  ---      -     -     -     -  *** really the end of profilr
09:32:45.41  SWS      -     -     -     -  Dark measurement started.
09:32:45.42  USH      -     -     -     -  Dark measurement started.
09:32:45.45  LSH      -     -     -     -  Dark measurement started.
09:32:46.35  SWS      -     -     -     -  Manual scene recording started.
09:32:47.05  USH      -     -     -     -  Manual scene recording started.
09:32:48.26  LSH      -     -     -     -  Manual scene recording started.
09:32:50.33  USH      -     -     -     -  Idling
09:32:50.43  SWS      -     -     -     -  Idling
09:32:50.45  SWS      -     -     -     -  Idling
09:32:50.48  LSH      -     -     -     -  Idling
09:32:59.76  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
09:33:09.79  SWS      -     -   200     -  VIS int.time changed from 50ms to 200ms.
09:33:13.87  SWS      -     -     -   200  NIR int.time changed from 50ms to 200ms.
09:33:17.11  LSH      -     -     -     -  Dark measurement started.
09:33:17.11  USH      -     -     -     -  Dark measurement started.
09:33:17.26  SWS      -     -     -     -  Dark measurement started.
09:33:18.74  USH      -     -     -     -  Idling
09:33:19.54  LSH      -     -     -     -  Idling
09:33:19.94  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
09:33:22.18  LSH      -     -     -     -  Manual scene recording started.
09:33:22.18  USH      -     -     -     -  Manual scene recording started.
09:33:22.32  SWS      -     -     -     -  Manual scene recording started.
09:33:28.63  SWS   174R     -     -     -  Telescope position set to 174R
09:35:21.09  ---      -     -     -     -  *** start run 1.1 100'
09:39:11.28  USH      -     -     -     -  Dark measurement started.
09:39:11.36  SWS      -     -     -     -  Dark measurement started.
09:39:11.39  LSH      -     -     -     -  Dark measurement started.
09:39:12.73  USH      -     -     -     -  Manual scene recording started.
09:39:13.93  SWS      -     -     -     -  Manual scene recording started.
09:39:14.14  LSH      -     -     -     -  Manual scene recording started.
09:42:57.77  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
09:43:00.18  SWS      -     -     -     -  Dark measurement started.
09:43:02.61  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
09:43:11.06  SWS     6F     -     -     -  Telescope position set to 6F
09:43:16.43  SWS      -     -    50     -  VIS int.time changed from 200ms to 50ms.
09:43:19.34  SWS      -     -     -    50  NIR int.time changed from 200ms to 50ms.
09:43:22.78  SWS      -     -     -     -  Dark measurement started.
09:43:23.75  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
09:43:26.23  SWS      -     -     -     -  Manual scene recording started.
09:45:24.48  ---      -     -     -     -  *** end run
09:45:31.87  SWS      -     -     -     -  Dark measurement started.
09:45:31.96  USH      -     -     -     -  Dark measurement started.
09:45:31.98  LSH      -     -     -     -  Dark measurement started.
09:45:32.70  LSH      -     -     -     -  Dark measurement started.
09:45:32.83  SWS      -     -     -     -  Manual scene recording started.
09:45:33.51  USH      -     -     -     -  Manual scene recording started.
09:45:35.15  LSH      -     -     -     -  Idling
09:47:15.37  LSH      -     -     -     -  Manual scene recording started.
09:47:40.93  ---      -     -     -     -  *** start profile up
10:13:53.67  ---      -     -     -     -  *** end profile FL240
10:13:59.60  USH      -     -     -     -  Dark measurement started.
10:13:59.62  SWS      -     -     -     -  Dark measurement started.
10:13:59.67  LSH      -     -     -     -  Dark measurement started.
10:14:00.74  SWS      -     -     -     -  Manual scene recording started.
10:14:01.04  USH      -     -     -     -  Manual scene recording started.
10:14:02.43  LSH      -     -     -     -  Manual scene recording started.
10:15:46.09  ---      -     -     -     -  *** start run 2.1
10:15:46.21  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:15:53.86  SWS      -     -     -     -  Dark measurement started.
```

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10:15:54.79  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:15:56.72  SWS      -     -     -     -  Manual scene recording started.
10:17:54.74  ---      -     -     -     -  *** really start run 2.1, FL230
10:18:48.43  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:18:49.78  SWS      -     -     -     -  Dark measurement started.
10:18:50.71  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:18:54.22  SWS      -     -   100     -  VIS int.time changed from 50ms to 100ms.
10:18:57.58  SWS      -     -     -   100  NIR int.time changed from 50ms to 100ms.
10:18:59.23  SWS      -     -     -     -  Dark measurement started.
10:19:00.67  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:19:02.73  SWS      -     -     -     -  Manual scene recording started.
10:22:19.68  LSH      -     -     -     -  Dark measurement started.
10:22:19.75  USH      -     -     -     -  Dark measurement started.
10:22:19.77  SWS      -     -     -     -  Dark measurement started.
10:22:21.33  USH      -     -     -     -  Manual scene recording started.
10:22:21.52  SWS      -     -     -     -  Manual scene recording started.
10:22:22.13  LSH      -     -     -     -  Manual scene recording started.
10:24:36.35  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
10:24:38.00  LSH      -     -     -     -  Dark measurement started.
10:24:40.45  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
10:24:43.71  LSH      -     -   100     -  VIS int.time changed from 200ms to 100ms.
10:24:46.65  LSH      -     -     -   100  NIR int.time changed from 200ms to 100ms.
10:24:48.80  LSH      -     -     -     -  Dark measurement started.
10:24:50.24  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
10:24:52.31  LSH      -     -     -     -  Manual scene recording started.
10:26:32.24  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:26:34.31  SWS      -     -     -     -  Dark measurement started.
10:26:35.77  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:26:38.51  SWS   174R     -     -     -  Telescope position set to 174R
10:26:50.02  SWS      -     -    40     -  VIS int.time changed from 100ms to 40ms.
10:26:53.33  SWS      -     -     -    40  NIR int.time changed from 100ms to 40ms.
10:26:55.04  SWS      -     -     -     -  Dark measurement started.
10:26:55.87  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:26:57.76  SWS      -     -     -     -  Manual scene recording started.
10:27:55.78  ---      -     -     -     -  *** end run
10:27:59.91  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:28:01.23  SWS      -     -     -     -  Dark measurement started.
10:28:02.12  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:28:22.05  SWS     6F     -     -     -  Telescope position set to 6F
10:28:40.01  SWS      -     -     -     -  Dark measurement started.
10:28:40.85  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:28:43.31  SWS      -     -     -     -  Manual scene recording started.
10:29:57.19  ---      -     -     -     -  *** start run 2.2
10:34:02.74  SWS      -     -     -     -  Dark measurement started.
10:34:02.79  LSH      -     -     -     -  Dark measurement started.
10:34:02.80  USH      -     -     -     -  Dark measurement started.
10:34:03.60  SWS      -     -     -     -  Manual scene recording started.
10:34:04.38  LSH      -     -     -     -  Manual scene recording started.
10:34:04.67  USH      -     -     -     -  Manual scene recording started.
10:37:25.44  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:37:27.89  SWS      -     -     -     -  Dark measurement started.
10:37:28.73  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:37:30.13  SWS   174R     -     -     -  Telescope position set to 174R
10:37:39.66  SWS      -     -     -     -  Dark measurement started.
10:37:40.53  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:37:42.42  SWS      -     -     -     -  Manual scene recording started.
10:39:46.70  ---      -     -     -     -  *** end run
10:39:52.25  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:39:53.59  SWS      -     -     -     -  Dark measurement started.
10:39:54.44  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:40:05.88  SWS     6F     -     -     -  Telescope position set to 6F
10:40:10.44  LSH      -     -     -     -  Dark measurement started.
10:40:10.44  SWS      -     -     -     -  Dark measurement started.
10:40:10.47  USH      -     -     -     -  Dark measurement started.
10:40:11.47  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:40:11.91  LSH      -     -     -     -  Manual scene recording started.
10:40:12.30  USH      -     -     -     -  Manual scene recording started.
10:40:18.45  SWS      -     -     -     -  Manual scene recording started.
10:41:39.97  ---      -     -     -     -  *** start run 2.3
```

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10:45:14.30  LSH      -     -     -     -  Dark measurement started.
10:45:14.31  USH      -     -     -     -  Dark measurement started.
10:45:14.40  SWS      -     -     -     -  Dark measurement started.
10:45:15.61  SWS      -     -     -     -  Manual scene recording started.
10:45:15.80  LSH      -     -     -     -  Manual scene recording started.
10:45:15.96  USH      -     -     -     -  Manual scene recording started.
10:48:31.41  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:48:33.30  SWS      -     -     -     -  Dark measurement started.
10:48:34.13  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:48:36.29  SWS   174R     -     -     -  Telescope position set to 174R
10:48:48.42  SWS      -     -     -     -  Dark measurement started.
10:48:49.25  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:48:51.15  SWS      -     -     -     -  Manual scene recording started.
10:51:37.07  ---      -     -     -     -  *** end run
10:51:42.47  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:51:45.09  USH      -     -     -     -  Dark measurement started.
10:51:45.10  LSH      -     -     -     -  Dark measurement started.
10:51:45.49  SWS      -     -     -     -  Dark measurement started.
10:51:46.34  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:51:46.62  USH      -     -     -     -  Manual scene recording started.
10:51:46.76  LSH      -     -     -     -  Manual scene recording started.
10:52:03.45  SWS      -     -     -     -  Manual scene recording started.
10:53:48.60  ---      -     -     -     -  *** start orbit
10:53:57.96  SWS     6F     -     -     -  Telescope position set to 6F
10:55:27.87  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:55:31.87  SWS      -     -     5     -  VIS int.time changed from 40ms to 5ms.
10:55:34.67  SWS      -     -     -     5  NIR int.time changed from 40ms to 5ms.
10:55:36.14  SWS      -     -     -     -  Dark measurement started.
10:55:36.63  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:55:39.46  SWS      -     -     -     -  Manual scene recording started.
10:58:36.89  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:59:05.89  SWS      -     -     -    10  NIR int.time changed from 5ms to 10ms.
10:59:09.82  SWS      -     -     -     -  Dark measurement started.
10:59:10.36  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
10:59:15.38  SWS      -     -     -     -  Manual scene recording started.
11:00:50.23  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
11:00:52.90  SWS      -     -     -     5  NIR int.time changed from 10ms to 5ms.
11:00:57.91  SWS      -     -     -    10  NIR int.time changed from 5ms to 10ms.
11:01:21.76  SWS      -     -    40     -  VIS int.time changed from 5ms to 40ms.
11:01:24.79  SWS      -     -     -    40  NIR int.time changed from 10ms to 40ms.
11:01:27.98  SWS      -     -     -     -  Dark measurement started.
11:01:28.83  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
11:01:31.28  SWS      -     -     -     -  Manual scene recording started.
11:03:33.30  ---      -     -     -     -  *** start profile 3 from FL230
11:03:39.07  SWS      -     -     -     -  Dark measurement started.
11:03:39.10  USH      -     -     -     -  Dark measurement started.
11:03:39.12  LSH      -     -     -     -  Dark measurement started.
11:03:39.96  SWS      -     -     -     -  Manual scene recording started.
11:03:40.75  USH      -     -     -     -  Manual scene recording started.
11:03:40.90  LSH      -     -     -     -  Manual scene recording started.
11:05:32.48  ---      -     -     -     -  *** end p start run
11:05:59.97  ---      -     -     -     -  *** fl250
11:09:50.76  USH      -     -     -     -  Dark measurement started.
11:09:50.78  SWS      -     -     -     -  Dark measurement started.
11:09:50.79  LSH      -     -     -     -  Dark measurement started.
11:09:51.81  SWS      -     -     -     -  Manual scene recording started.
11:09:52.23  USH      -     -     -     -  Manual scene recording started.
11:09:52.62  LSH      -     -     -     -  Manual scene recording started.
11:10:38.20  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
11:10:40.09  SWS      -     -     -     -  Dark measurement started.
11:10:40.92  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
11:10:41.93  SWS   174R     -     -     -  Telescope position set to 174R
11:10:50.14  SWS      -     -     -     -  Dark measurement started.
11:10:50.99  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
11:10:53.43  SWS      -     -     -     -  Manual scene recording started.
11:13:02.79  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
11:13:05.24  SWS      -     -     -     -  Dark measurement started.
11:13:06.11  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
11:13:14.17  SWS     6F     -     -     -  Telescope position set to 6F
```

| | | | | | | |
|---|---|---|---|---|---|---|
| 11:13:15.92 | SWS | - | - | - | - | Dark measurement started. |
| 11:13:16.75 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:13:18.66 | SWS | - | - | - | - | Manual scene recording started. |
| 11:15:23.48 | --- | - | - | - | - | *** end run |
| 11:15:27.39 | SWS | - | - | - | - | Dark measurement started. |
| 11:15:27.42 | LSH | - | - | - | - | Dark measurement started. |
| 11:15:27.43 | USH | - | - | - | - | Dark measurement started. |
| 11:15:28.26 | SWS | - | - | - | - | Manual scene recording started. |
| 11:15:29.11 | LSH | - | - | - | - | Manual scene recording started. |
| 11:15:29.28 | USH | - | - | - | - | Manual scene recording started. |
| 11:17:24.38 | --- | - | - | - | - | *** start profile to fl300 |
| 11:17:32.03 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:17:35.11 | SWS | - | - | 50 | - | VIS int.time changed from 40ms to 50ms. |
| 11:17:37.72 | SWS | - | - | - | 50 | NIR int.time changed from 40ms to 50ms. |
| 11:17:38.95 | SWS | - | - | - | - | Dark measurement started. |
| 11:17:39.90 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:17:41.82 | SWS | - | - | - | - | Manual scene recording started. |
| 11:23:47.78 | --- | - | - | - | - | *** end p start run |
| 11:23:51.40 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:23:53.32 | SWS | - | - | - | - | Dark measurement started. |
| 11:23:54.32 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:24:01.53 | SWS | 174R | - | - | - | Telescope position set to 174R |
| 11:24:04.85 | SWS | - | - | - | - | Manual scene recording started. |
| 11:27:04.16 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:27:06.11 | SWS | - | - | - | - | Dark measurement started. |
| 11:27:07.06 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:27:09.21 | SWS | 6F | - | - | - | Telescope position set to 6F |
| 11:27:18.15 | SWS | - | - | - | - | Manual scene recording started. |
| 11:29:07.93 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:29:09.27 | SWS | - | - | - | - | Dark measurement started. |
| 11:29:10.22 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:29:11.57 | SWS | 174R | - | - | - | Telescope position set to 174R |
| 11:29:19.57 | SWS | - | - | - | - | Manual scene recording started. |
| 11:30:45.78 | --- | - | - | - | - | *** end run |
| 11:30:47.88 | SWS | - | - | - | - | Dark measurement started. |
| 11:30:47.94 | LSH | - | - | - | - | Dark measurement started. |
| 11:30:47.96 | USH | - | - | - | - | Dark measurement started. |
| 11:30:48.89 | SWS | - | - | - | - | Manual scene recording started. |
| 11:30:49.55 | LSH | - | - | - | - | Manual scene recording started. |
| 11:30:49.82 | USH | - | - | - | - | Manual scene recording started. |
| 11:33:54.96 | --- | - | - | - | - | *** start p |
| 11:39:48.21 | --- | - | - | - | - | *** end p start run at fl330 |
| 11:39:51.46 | SWS | - | - | - | - | Dark measurement started. |
| 11:39:51.46 | LSH | - | - | - | - | Dark measurement started. |
| 11:39:51.49 | USH | - | - | - | - | Dark measurement started. |
| 11:39:52.42 | SWS | - | - | - | - | Manual scene recording started. |
| 11:39:53.15 | LSH | - | - | - | - | Manual scene recording started. |
| 11:39:53.32 | USH | - | - | - | - | Manual scene recording started. |
| 11:43:18.69 | SWS | - | - | - | - | Dark measurement started. |
| 11:43:18.71 | USH | - | - | - | - | Dark measurement started. |
| 11:43:18.73 | LSH | - | - | - | - | Dark measurement started. |
| 11:43:19.67 | SWS | - | - | - | - | Manual scene recording started. |
| 11:43:20.34 | USH | - | - | - | - | Manual scene recording started. |
| 11:43:20.56 | LSH | - | - | - | - | Manual scene recording started. |
| 11:46:45.46 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:46:47.39 | SWS | - | - | - | - | Dark measurement started. |
| 11:46:48.33 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:46:49.22 | SWS | 6F | - | - | - | Telescope position set to 6F |
| 11:47:01.72 | SWS | - | - | 100 | - | VIS int.time changed from 50ms to 100ms. |
| 11:47:03.92 | SWS | - | - | - | 100 | NIR int.time changed from 50ms to 100ms. |
| 11:47:05.84 | SWS | - | - | - | - | Dark measurement started. |
| 11:47:07.29 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:47:09.35 | SWS | - | - | - | - | Manual scene recording started. |
| 11:49:51.78 | --- | - | - | - | - | *** end run |
| 11:49:55.09 | SWS | - | - | - | - | Dark measurement started. |
| 11:49:55.11 | USH | - | - | - | - | Dark measurement started. |
| 11:49:55.20 | LSH | - | - | - | - | Dark measurement started. |
| 11:49:56.58 | SWS | - | - | - | - | Manual scene recording started. |
| 11:49:56.74 | USH | - | - | - | - | Manual scene recording started. |

| | | | | | | |
|---|---|---|---|---|---|---|
| 11:49:56.99 | LSH | - | - | - | - | Manual scene recording started. |
| 11:50:08.11 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:50:18.27 | SWS | 174R | - | - | - | Telescope position set to 174R |
| 11:50:22.70 | SWS | - | - | - | - | Dark measurement started. |
| 11:50:24.18 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:50:26.86 | SWS | - | - | - | - | Manual scene recording started. |
| 11:50:41.95 | USH | - | - | - | - | Dark measurement started. |
| 11:50:41.97 | SWS | - | - | - | - | Dark measurement started. |
| 11:50:41.98 | LSH | - | - | - | - | Dark measurement started. |
| 11:50:43.45 | USH | - | - | - | - | Manual scene recording started. |
| 11:50:43.60 | SWS | - | - | - | - | Manual scene recording started. |
| 11:50:43.83 | LSH | - | - | - | - | Manual scene recording started. |
| 11:51:48.80 | --- | - | - | - | - | *** start run fl330 |
| 11:54:48.07 | LSH | - | - | - | - | Dark measurement started. |
| 11:54:48.09 | USH | - | - | - | - | Dark measurement started. |
| 11:54:48.09 | SWS | - | - | - | - | Dark measurement started. |
| 11:54:49.59 | LSH | - | - | - | - | Manual scene recording started. |
| 11:54:49.73 | USH | - | - | - | - | Manual scene recording started. |
| 11:54:49.97 | SWS | - | - | - | - | Manual scene recording started. |
| 11:58:00.23 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:58:02.32 | SWS | - | - | - | - | Dark measurement started. |
| 11:58:03.75 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:58:03.81 | SWS | 6F | - | - | - | Telescope position set to 6F |
| 11:58:19.54 | SWS | - | - | - | - | Dark measurement started. |
| 11:58:20.98 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 11:58:23.69 | SWS | - | - | - | - | Manual scene recording started. |
| 12:00:02.71 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 12:00:04.82 | SWS | - | - | - | - | Dark measurement started. |
| 12:00:06.25 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 12:00:07.13 | SWS | 174R | - | - | - | Telescope position set to 174R |
| 12:00:25.81 | SWS | - | - | - | - | Manual scene recording started. |
| 12:02:48.71 | --- | - | - | - | - | *** end run |
| 12:02:51.45 | SWS | - | - | - | - | Dark measurement started. |
| 12:02:51.48 | LSH | - | - | - | - | Dark measurement started. |
| 12:02:51.49 | USH | - | - | - | - | Dark measurement started. |
| 12:02:52.89 | SWS | - | - | - | - | Manual scene recording started. |
| 12:02:53.09 | LSH | - | - | - | - | Manual scene recording started. |
| 12:02:53.32 | USH | - | - | - | - | Manual scene recording started. |
| 12:04:22.13 | --- | - | - | - | - | *** start run |
| 12:04:22.15 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 12:04:24.84 | SWS | - | - | 50 | - | VIS int.time changed from 100ms to 50ms. |
| 12:04:27.87 | SWS | - | - | - | 50 | NIR int.time changed from 100ms to 50ms. |
| 12:04:30.16 | SWS | - | - | - | - | Dark measurement started. |
| 12:04:31.09 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 12:04:33.01 | SWS | - | - | - | - | Manual scene recording started. |
| 12:05:05.73 | --- | - | - | - | - | *** really start run at fl330 |
| 12:09:52.24 | USH | - | - | - | - | Dark measurement started. |
| 12:09:52.26 | SWS | - | - | - | - | Dark measurement started. |
| 12:09:52.28 | LSH | - | - | - | - | Dark measurement started. |
| 12:09:53.40 | SWS | - | - | - | - | Manual scene recording started. |
| 12:09:53.75 | USH | - | - | - | - | Manual scene recording started. |
| 12:09:54.26 | LSH | - | - | - | - | Manual scene recording started. |
| 12:12:37.20 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 12:12:39.12 | SWS | - | - | - | - | Dark measurement started. |
| 12:12:40.09 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 12:12:40.82 | SWS | 6F | - | - | - | Telescope position set to 6F |
| 12:12:55.05 | SWS | - | - | 100 | - | VIS int.time changed from 50ms to 100ms. |
| 12:12:58.35 | SWS | - | - | - | 100 | NIR int.time changed from 50ms to 100ms. |
| 12:13:00.01 | SWS | - | - | - | - | Dark measurement started. |
| 12:13:01.44 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 12:13:09.75 | SWS | - | - | - | - | Manual scene recording started. |
| 12:15:23.88 | --- | - | - | - | - | *** end run |
| 12:15:26.85 | SWS | - | - | - | - | Dark measurement started. |
| 12:15:26.88 | USH | - | - | - | - | Dark measurement started. |
| 12:15:26.88 | LSH | - | - | - | - | Dark measurement started. |
| 12:15:27.38 | USH | - | - | - | - | Dark measurement started. |
| 12:15:27.58 | LSH | - | - | - | - | Dark measurement started. |
| 12:15:28.29 | SWS | - | - | - | - | Manual scene recording started. |
| 12:15:28.89 | USH | - | - | - | - | Idling |

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12:15:29.12  LSH      -     -     -     -  Idling
12:15:42.25  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
12:15:42.25  USH      -     -     -     -  Manual scene sampling started - Not Recording!
12:15:42.34  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:15:43.47  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:15:44.91  SWS      -     -     -     -  Dark measurement started.
12:15:44.96  LSH      -     -     -     -  Dark measurement started.
12:15:45.13  USH      -     -     -     -  Dark measurement started.
12:15:46.34  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:15:46.55  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
12:15:46.75  USH      -     -     -     -  Manual scene sampling started - Not Recording!
12:15:51.94  USH      -     -     -     -  Manual scene recording started.
12:15:52.15  SWS      -     -     -     -  Manual scene recording started.
12:15:52.36  LSH      -     -     -     -  Manual scene recording started.
12:17:48.27  ---      -     -     -     -  *** start profile down
12:22:15.88  ---      -     -     -     -  *** end profile start run
12:24:28.73  SWS      -     -     -     -  Dark measurement started.
12:24:28.76  LSH      -     -     -     -  Dark measurement started.
12:24:28.78  USH      -     -     -     -  Dark measurement started.
12:24:30.16  SWS      -     -     -     -  Manual scene recording started.
12:24:30.37  LSH      -     -     -     -  Manual scene recording started.
12:24:30.61  USH      -     -     -     -  Manual scene recording started.
12:24:47.87  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:24:49.66  LSH      -     -     -     -  Dark measurement started.
12:24:49.69  USH      -     -     -     -  Dark measurement started.
12:24:49.94  SWS      -     -     -     -  Dark measurement started.
12:24:51.12  LSH      -     -     -     -  Manual scene recording started.
12:24:51.29  USH      -     -     -     -  Manual scene recording started.
12:24:51.51  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:25:00.48  SWS      -     -     -     -  Manual scene recording started.
12:25:22.62  SWS   174R     -     -     -  Telescope position set to 174R
12:27:55.10  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:27:56.43  USH      -     -     -     -  Dark measurement started.
12:27:56.45  LSH      -     -     -     -  Dark measurement started.
12:27:56.55  SWS      -     -     -     -  Dark measurement started.
12:27:56.77  USH      -     -     -     -  Dark measurement started.
12:27:58.06  LSH      -     -     -     -  Manual scene recording started.
12:27:58.14  SWS     6F     -     -     -  Telescope position set to 6F
12:27:58.28  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:27:58.56  USH      -     -     -     -  Idling
12:28:13.21  USH      -     -     -     -  Dark measurement started.
12:28:13.23  LSH      -     -     -     -  Dark measurement started.
12:28:13.44  SWS      -     -     -     -  Dark measurement started.
12:28:14.65  USH      -     -     -     -  Idling
12:28:14.85  LSH      -     -     -     -  Manual scene recording started.
12:28:15.04  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:28:16.55  USH      -     -     -     -  Manual scene recording started.
12:28:17.14  SWS      -     -     -     -  Manual scene recording started.
12:31:14.74  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:31:16.37  USH      -     -     -     -  Dark measurement started.
12:31:16.40  LSH      -     -     -     -  Dark measurement started.
12:31:16.81  SWS      -     -     -     -  Dark measurement started.
12:31:17.86  USH      -     -     -     -  Manual scene recording started.
12:31:18.01  LSH      -     -     -     -  Manual scene recording started.
12:31:18.28  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:31:23.75  SWS   174R     -     -     -  Telescope position set to 174R
12:31:27.22  SWS      -     -     -     -  Manual scene recording started.
12:31:40.52  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:31:44.26  SWS      -     -    50     -  VIS int.time changed from 100ms to 50ms.
12:31:47.21  SWS      -     -     -    50  NIR int.time changed from 100ms to 50ms.
12:31:49.24  SWS      -     -     -     -  Dark measurement started.
12:31:50.18  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:31:52.67  SWS      -     -     -     -  Manual scene recording started.
12:32:21.58  ---      -     -     -     -  *** end run
12:32:26.40  SWS      -     -     -     -  Dark measurement started.
12:32:26.49  USH      -     -     -     -  Dark measurement started.
12:32:26.51  LSH      -     -     -     -  Dark measurement started.
12:32:26.92  USH      -     -     -     -  Dark measurement started.
12:32:27.38  SWS      -     -     -     -  Manual scene recording started.
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12:32:28.26  LSH      -     -     -     -  Manual scene recording started.
12:32:28.44  USH      -     -     -     -  Idling
12:32:33.29  USH      -     -     -     -  Manual scene sampling started - Not Recording!
12:32:33.35  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
12:32:33.40  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:32:37.24  USH      -     -     -     -  Dark measurement started.
12:32:37.32  SWS      -     -     -     -  Dark measurement started.
12:32:37.43  LSH      -     -     -     -  Dark measurement started.
12:32:38.41  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:32:38.69  USH      -     -     -     -  Manual scene sampling started - Not Recording!
12:32:39.08  LSH      -     -     -     -  Manual scene sampling started - Not Recording!
12:32:41.48  SWS      -     -     -     -  Manual scene recording started.
12:32:41.77  LSH      -     -     -     -  Manual scene recording started.
12:32:42.00  USH      -     -     -     -  Manual scene recording started.
12:33:28.54  ---      -     -     -     -  ***
12:33:28.65  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:33:33.43  SWS      -     -     -     -  Dark measurement started.
12:33:34.37  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:33:35.75  SWS     6F     -     -     -  Telescope position set to 6F
12:33:49.84  SWS      -     -   100     -  VIS int.time changed from 50ms to 100ms.
12:33:52.27  SWS      -     -     -   100  NIR int.time changed from 50ms to 100ms.
12:33:54.34  SWS      -     -     -     -  Dark measurement started.
12:33:55.77  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:33:57.85  SWS      -     -     -     -  Manual scene recording started.
12:34:24.00  ---      -     -     -     -  *** start p
12:40:20.06  ---      -     -     -     -  *** end p start r fl230
12:40:20.14  SWS      -     -     -     -  Dark measurement started.
12:40:20.17  USH      -     -     -     -  Dark measurement started.
12:40:20.19  LSH      -     -     -     -  Dark measurement started.
12:40:21.57  SWS      -     -     -     -  Manual scene recording started.
12:40:21.78  USH      -     -     -     -  Manual scene recording started.
12:40:22.03  LSH      -     -     -     -  Manual scene recording started.
12:43:36.28  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:43:39.29  SWS      -     -    50     -  VIS int.time changed from 100ms to 50ms.
12:43:42.29  SWS      -     -     -    50  NIR int.time changed from 100ms to 50ms.
12:43:44.34  SWS      -     -     -     -  Dark measurement started.
12:43:45.30  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:43:47.21  SWS      -     -     -     -  Manual scene recording started.
12:44:09.77  LSH      -     -     -     -  Dark measurement started.
12:44:09.79  USH      -     -     -     -  Dark measurement started.
12:44:09.89  SWS      -     -     -     -  Dark measurement started.
12:44:11.15  SWS      -     -     -     -  Manual scene recording started.
12:44:11.21  LSH      -     -     -     -  Manual scene recording started.
12:44:11.41  USH      -     -     -     -  Manual scene recording started.
12:47:02.74  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:47:04.27  LSH      -     -     -     -  Dark measurement started.
12:47:04.29  USH      -     -     -     -  Dark measurement started.
12:47:04.64  SWS      -     -     -     -  Dark measurement started.
12:47:05.61  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:47:05.71  LSH      -     -     -     -  Manual scene recording started.
12:47:05.92  USH      -     -     -     -  Manual scene recording started.
12:47:08.54  SWS   174R     -     -     -  Telescope position set to 174R
12:47:27.65  SWS      -     -   100     -  VIS int.time changed from 50ms to 100ms.
12:47:30.26  SWS      -     -     -   100  NIR int.time changed from 50ms to 100ms.
12:47:32.08  SWS      -     -     -     -  Dark measurement started.
12:47:33.56  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:47:35.03  SWS      -     -     -     -  Manual scene recording started.
12:50:45.71  ---      -     -     -     -  *** end run
12:50:53.07  SWS      -     -     -     -  Dark measurement started.
12:50:53.07  LSH      -     -     -     -  Dark measurement started.
12:50:53.11  USH      -     -     -     -  Dark measurement started.
12:50:54.56  SWS      -     -     -     -  Manual scene recording started.
12:50:54.72  LSH      -     -     -     -  Manual scene recording started.
12:50:54.96  USH      -     -     -     -  Manual scene recording started.
12:50:58.29  SWS      -     -     -     -  Manual scene sampling started - Not Recording!
12:51:06.08  SWS     6F     -     -     -  Telescope position set to 6F
12:51:25.10  SWS      -     -    50     -  VIS int.time changed from 100ms to 50ms.
12:51:28.43  SWS      -     -     -    50  NIR int.time changed from 100ms to 50ms.
12:51:31.17  SWS      -     -     -     -  Dark measurement started.
```

| | | | | | | |
|---|---|---|---|---|---|---|
| 12:51:32.10 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 12:51:34.60 | SWS | - | - | - | - | Manual scene recording started. |
| 12:52:33.47 | --- | - | - | - | - | *** start run fl230 |
| 12:55:54.78 | --- | - | - | - | - | *** end run start orbit |
| 12:57:55.94 | LSH | - | - | - | - | Idling |
| 12:57:55.94 | USH | - | - | - | - | Idling |
| 12:57:55.96 | SWS | - | - | - | - | Idling |
| 12:57:57.59 | SWS | - | - | - | - | Dark measurement started. |
| 12:57:57.59 | LSH | - | - | - | - | Dark measurement started. |
| 12:57:57.60 | USH | - | - | - | - | Dark measurement started. |
| 12:57:58.53 | SWS | - | - | - | - | Idling |
| 12:57:59.23 | LSH | - | - | - | - | Idling |
| 12:57:59.43 | USH | - | - | - | - | Idling |
| 12:58:01.30 | SWS | - | - | 10 | - | VIS int.time changed from 50ms to 10ms. |
| 12:58:04.54 | SWS | - | - | - | 10 | NIR int.time changed from 50ms to 10ms. |
| 12:58:07.57 | USH | - | - | 75 | - | VIS int.time changed from 100ms to 75ms. |
| 12:58:10.00 | USH | - | - | - | 75 | NIR int.time changed from 100ms to 75ms. |
| 12:58:11.84 | SWS | - | - | - | - | Dark measurement started. |
| 12:58:11.85 | LSH | - | - | - | - | Dark measurement started. |
| 12:58:11.85 | USH | - | - | - | - | Dark measurement started. |
| 12:58:13.30 | SWS | - | - | - | - | Idling |
| 12:58:14.01 | USH | - | - | - | - | Idling |
| 12:58:14.11 | LSH | - | - | - | - | Idling |
| 12:58:16.19 | SWS | - | - | - | - | Manual scene recording started. |
| 12:58:16.19 | LSH | - | - | - | - | Manual scene recording started. |
| 12:58:16.21 | USH | - | - | - | - | Manual scene recording started. |
| 13:00:06.39 | SWS | - | - | - | - | Idling |
| 13:00:06.40 | LSH | - | - | - | - | Idling |
| 13:00:06.42 | USH | - | - | - | - | Idling |
| 13:00:07.62 | SWS | - | - | - | - | Dark measurement started. |
| 13:00:07.63 | LSH | - | - | - | - | Dark measurement started. |
| 13:00:07.63 | USH | - | - | - | - | Dark measurement started. |
| 13:00:08.16 | SWS | - | - | - | - | Idling |
| 13:00:09.80 | USH | - | - | - | - | Idling |
| 13:00:09.82 | LSH | - | - | - | - | Idling |
| 13:00:11.51 | SWS | - | - | - | - | Manual scene recording started. |
| 13:00:11.52 | LSH | - | - | - | - | Manual scene recording started. |
| 13:00:11.52 | USH | - | - | - | - | Manual scene recording started. |
| 13:00:17.91 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 13:00:21.86 | SWS | - | - | 100 | - | VIS int.time changed from 10ms to 100ms. |
| 13:00:26.22 | SWS | - | - | - | 100 | NIR int.time changed from 10ms to 100ms. |
| 13:00:28.47 | SWS | - | - | - | - | Dark measurement started. |
| 13:00:29.91 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |
| 13:00:31.97 | SWS | - | - | - | - | Manual scene recording started. |
| 13:02:12.94 | --- | - | - | - | - | *** end of science |
| 13:02:15.31 | USH | - | - | - | - | Idling |
| 13:02:15.31 | SWS | - | - | - | - | Idling |
| 13:02:15.33 | LSH | - | - | - | - | Idling |
| 13:02:17.41 | SWS | - | - | - | - | Dark measurement started. |
| 13:02:17.41 | LSH | - | - | - | - | Dark measurement started. |
| 13:02:17.42 | USH | - | - | - | - | Dark measurement started. |
| 13:02:18.85 | SWS | - | - | - | - | Idling |
| 13:02:19.00 | USH | - | - | - | - | Idling |
| 13:02:19.05 | LSH | - | - | - | - | Idling |
| 13:02:22.36 | USH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 13:02:22.37 | LSH | - | - | - | - | Manual scene sampling started - Not Recording! |
| 13:02:22.39 | SWS | - | - | - | - | Manual scene sampling started - Not Recording! |

240
3 = 360
4 = 480

# ARIES flight log

Flight: 826 | page 1 of 3

Date: 12/09/07 | Operator(s): Joss / Zen. | Res: | Gain A: B:

Loc./Notes: S/W Approaches

***Scans:*** *either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]".* ***View:*** *mirror angle.*

| DRS time | Flt ptrn | Scans | View | Shtr | HBB | CBB | Comments |
|---|---|---|---|---|---|---|---|
| 0700 | Started | Ascii | Housekeeping Acquisition | | | | |
| 072900 | Grnd | 1/120 | HBB | Csd | 71-15 | | Ground Cal for brightnesses |
| 073038 | Grnd | 1/120 | CBB | Csd | 3359 | | |
| 085839 | FL180 | 1/60 1/60 | CAL | Csd | 7112 | 31-08 | CBB / HBB |
| 091202 | FL180 | 1/60 | CAL | Csd | 7061 | 3084 | |
| 091329 | FL180 | 1/60 | Zen | open | | | Start of Profile. |
| 091446 | ~~FL~~ | 1/60 | CAL | Csd | | | |
| | ~~100'~~ | | | | | | |
| 093335 | 100' | 1/60 | CAL | Csd | 7082 | 3068 | CAL in turn @ low level |
| 093504 | 100' | 480 | Nad | Csd | 7093 | 71-5 | |
| 093509 | 100' | 1/60 | CAL | Csd | 7067 | 3038 | |
| 094027 | 100' | 360 | Nad | Csd | | | |
| 094334 | 100' | 120 | Zen | open | | | Inbreak only |
| 094448 | 100' | 1/60x2 | CAL | Csd | 7062 | 31-04 | Using script cold/Hot CAL |
| 101328 | FL240 | " " | CAL | Csd | 7087 | 3073 | |
| 101437 | " " | " " | " | " | 7067 | 3084 | In turn |
| | | ~~480/1~~ ~~Zen~~ ~~open~~ | | | | | |
| 101708 | ~~FL230~~ | 1/60 x2 | CAL | Csd | 7083 | 3051 | CW script. |
| 101824 | FL230 | 480/1 | Zen | open | 7063 | 3038 | |
| 102225 | FL230 | 1/60 x2 | CAL | Csd | 7088 | 3045 | CW script 30 secs, 300 secs |
| 102340 | FL230 | 360x1 | ~~Zen~~ | open | 7112 | 3053 | 3 manual |
| 102650 | FL230 | ~~180/1~~ | Nad | Csd | | | |
| 102711 | FL230 | 180/1 | Nad | Csd | | | 102904 End Nadir view |
| 102819 | FL230 | 1/60 x2 | CAL | Csd | 7066 | 3029 | |
| 102955 | FL230 | 1/60 x2 | CAL | Csd | 7092 | 3048 | |
| 103111 | FL230 | 360x1 | open | Zen | | | |
| 103417 | FL230 | 1/60 x2 | Csd | CAL | | | |
| 103526 | FL230 | ~~240~~/1 | Zen | ~~Zen~~ | 7092 | 3031 | |
| 103735 | FL230 | 240/1 | Nad | Csd | 7048 | 3024 | |
| 103941 | FL230 | 1/60x2 | CAL | Csd | 7044 | 31-08 | |
| 104049 | FL230 | 1/60x2 | CAL | Csd | 7057 | 3086 | |

# ARIES flight log

Flight: B326 | page 2 of 3

Date: 12/09/07 | Operator(s): Joss Kerr | Res: 1 | Gain A:2 B:2

Loc./Notes: S/W Approaches CAESAR

*Scans: either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]". View: mirror angle.*

| DRS time | Flt ptrn | Scans | View | Shtr | HBB | CBB | Comments |
|---|---|---|---|---|---|---|---|
| 104204 | FL230 | 360x1 | Zen | open | | | Some smearing in Corrus |
| 104505 | FL230 | 1/60x2 | Cal | Clsd | 70.82 | 30.07 | |
| 104620 | FL230 | 360x1 | Zen | open | | | |
| 104856 | FL230 | 240 x1 | Nad | Clsd | 70.7 | 30.79 | |
| 105110 | FL230 | 1/60 x1 | CAL | clsd | 70.67 | 30.52 | |
| 105333 | FL230 | 360/1 | Zen | open | 70.78 | 30.75 | 50° banking orbits ended 105836 |
| 105554 | FL230 | 360/1 | Zen | open | | | " " " |
| 105832 | FL230 | 1/60 | CAL | clsd | 71.16 | 31.51 | Cal didn't finish properly end 110050 |
| 110026 | FL230 | 360/1 | Zen | open | | | Gor hung up on 60° orbits |
| 110110 | FL230 | CAL | CAL | clsd | 70.91 | 30.71 | |
| 110523 | FL250 | CAL | Cal | Clsd | 70.51 | 30.46 | |
| 110646 | FL250 | 360/1 | Zen | open | | | |
| 110940 | FL250 | CAL | CAL | clsd | 70.91 | 30.70 | |
| 111051 | FL250 | 240/1 | Nad | clsd | 70.75 | 30.51 | |
| 111259 | FL250 | 240/1 | Zen | open | | | |
| 111501 | FL250 | 1/60 | Cal | Clsd | 70.78 | 29.7 | |
| 112367 | FL300 | 1/60 | Cal | Clsd | 70.84 | 30.51 | |
| 112504 | FL300 | 240/1 | Nad | Clsd | | | Still some corrus above. |
| 112708 | FL300 | 240/1 | Zen | open | | | |
| 112917 | FL300 | 240/1 | Nad | Clsd | | | |
| 113053 | FL300 | 1/60x2 | Cal | Clsd | 70.76 | 30.10 | |
| 113900 | FL325 | 1/60x2 | Cal | Clsd | 70.68 | 30.97 | |
| 114015 | FL330 | 360/1 | Nad | Clsd | 7062 | 30.41 | |
| 114308 | FL330 | 1/60x2 | Cal | Clsd | 70.76 | 30.71 | |
| 114449 | FL330 | 360/1 | Nad | Clsd | 70.8 | 30.51 | Clear of Corrus above. |
| 114704 | FL330 | 360/1 | Zen | open | | | |
| 114912 | FL330 | 1/60 x2 | Cal | Clsd | 70.83 | 30.99 | |
| 115023 | FL330 | 1/60 x2 | Cal | Clsd | 70.60 | 30.84 | |
| 115147 | FL330 | 360 | Nad | Clsd | 7060 | 3067 | |
| 115449 | FL330 | 1/60x2 | Cal | Clsd | 70.71 | 30.72 | |
| 115599 | FL330 | 240/1 | Nad | Clsd | | | |
| 115806 | FL330 | 240/1 | Zen | open | | | |

# ARIES flight log

Flight: f336 | page 3 of 3

Date: 12/09/07 | Operator(s): Joss Kent. | Res: 1 | Gain A: 2 B: 2

Loc./Notes: slw Approaches

*Scans: either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]". View: mirror angle.*

| DRS time | Flt ptrn | Scans | View | Shtr | HBB | CBB | Comments |
|---|---|---|---|---|---|---|---|
| ~~MIRRORS~~ | | | | | | | |
| 120032 | FL330 | ~~66~~ 1/60 | cal | clsd | 70.81 | 30.4 | |
| 120142 | FL330 | 240/1 | Nad | clsd | | | ended 110254 |
| 120427 | FL330 | | cal | clsd | 70.64 | 30.42 | |
| 120543 | FL330 | 360/1 | Nad | clsd | | | |
| 120850 | FL330 | 1/60 | cal | clsd | 70.67 | 30.49 | |
| 121010 | FL330 | 300/1 | Nad | clsd | | | |
| 121244 | FL330 | 300/1 | Zen | open | | | |
| 121521 | FL330 | 1/60 | cal | clsd | 70.50 | 30.65 | |
| 122054 | FL290 | cal | | clsd | 70.77 | 30.89 | |
| 122216 | FL290 | Zen 240/1 | | open | 70.51 | 30.36 | |
| | FL290 | ~~240/1~~ | ~~Nad~~ | ~~clsd~~ | | | ~~In cloud run~~ |
| ~~122428~~ | | | | | | | |
| 122~~59~~ 42 | FL290 | 240 | Nad | clsd | | | |
| 122750 | FL290 | 1/60 | Cal | clsd | 70.49 | 30.61 | |
| 122907 | FL290 | 240 | Zen | open | | | |
| 123113 | FL290 | 240 | Nad | clsd | | | Ended @ 123222 |
| 123236 | FL290 | 1/60 x2 | Cal | clsd | 70.57 | 3031 | |
| 123917 | FL240 | 1/60 x2 | Cal | clsd | 70.51 | 30.16 | |
| 124036 | FL230 | 480/1 | Zen | open | 70.76 | 30.19 | |
| 124406 | FL230 | 1/60 x2 | Cal | clsd | 71.12 | 30.2 | |
| 124517 | FL230 | 240/1 | Zen | open | 70.56 | 30.11 | |
| 124723 | FL230 | 240/1 | Nad | clsd | | | |
| 124925 | FL230 | 1/60 x2 | Cal | clsd | 70.68 | 30.76 | |
| 125130 | FL230 | 1/60 x2 | Cal | clsd | 70.56 | 30.48 | |
| 125245 | FL230 | 480/1 | Zen | open | | | |
| | | ~~1/60 x2~~ | ~~cal~~ | | | | |
| 125611 | FL230 | | ~~Zen~~ | open | | | ONzero 50° |
| 125809 | FL230 | | Zen | Open | | | ONbor 50° ended 130004 |
| 130004 | FL230 | 1/60 x2 | cal | clsd | 70.74 | 30.23 | |
| 130509 | Stopped Housekeep acquisition | | | | | | |

| Microwave Radiometers FLIGHT LOG | Date | 12/09/07 | Flight | B326 | log pages | |
|---|---|---|---|---|---|---|
| Operator(s) | Pollard | | Campaign | CAESAR | | |
| Departure | Cranfield | | Arrival | Cranfield | | |

## System start

### MARSS

| | | | | | | |
|---|---|---|---|---|---|---|
| Visual pod inspection | | | | | | X |
| Close 3 SSP circuit breakers | | | | | | X |
| Close all MARSS circuit breakers | | | | | | X |
| FERA on | | | | at time | 06:56:33 | |
| Temperature controller initial temps | Ch16 | 19°C | Ch 17 | 19°C | Ch18 | 18°C |
| Temperature controller set points | | 54°C | | 58°C | -20 | 40°C |
| MARSS CPU on | | | | at time | 06:57:06 | |
| Initial target temperatures | Hot | 289.7 | | Cold | 286.9 | |
| Target heating | | | | | | X |
| *** CHECK SCAN HEAD CLEAR *** | | | | | | X |
| Scanning on (LMD box) | | | | at time | 07:01:15 | |
| Scan indication | | Monitor | X | | Visual | X |

### Deimos

| | | | | | | |
|---|---|---|---|---|---|---|
| Close all Deimos circuit breakers | | | | | | X |
| Turn on Deimos CPU | | | | | | X |
| *** CHECK SCAN HEAD CLEAR *** | | | | | | X |
| Start Deimos Software | | | | at time | 07:03:53 | |
| Initial target temperatures | Hot | 289.9 | | Cold | 289.0 | |
| Target heating | | | | | | X |
| Scan indication | | Monitor | X | | Visual | |
| Weather | Cloud | | | Precip | | |
| | Surface | | | Pressure | | |
| | Other | | | | | |

## System functionality check

(after initial system warmup, approx 1 hour)

| | | | | | | |
|---|---|---|---|---|---|---|
| PC to DRS Time error | | $t_{PC}=t_{DRS}$ + | | at time | | |
| Brightness temps 'sensible' | | | | | | X |
| Target temps | MARSS: | Hot | 344.6 | Cold | 288.0 | |
| | Deimos: | Hot | 344.9 | Cold | 295.9 | |

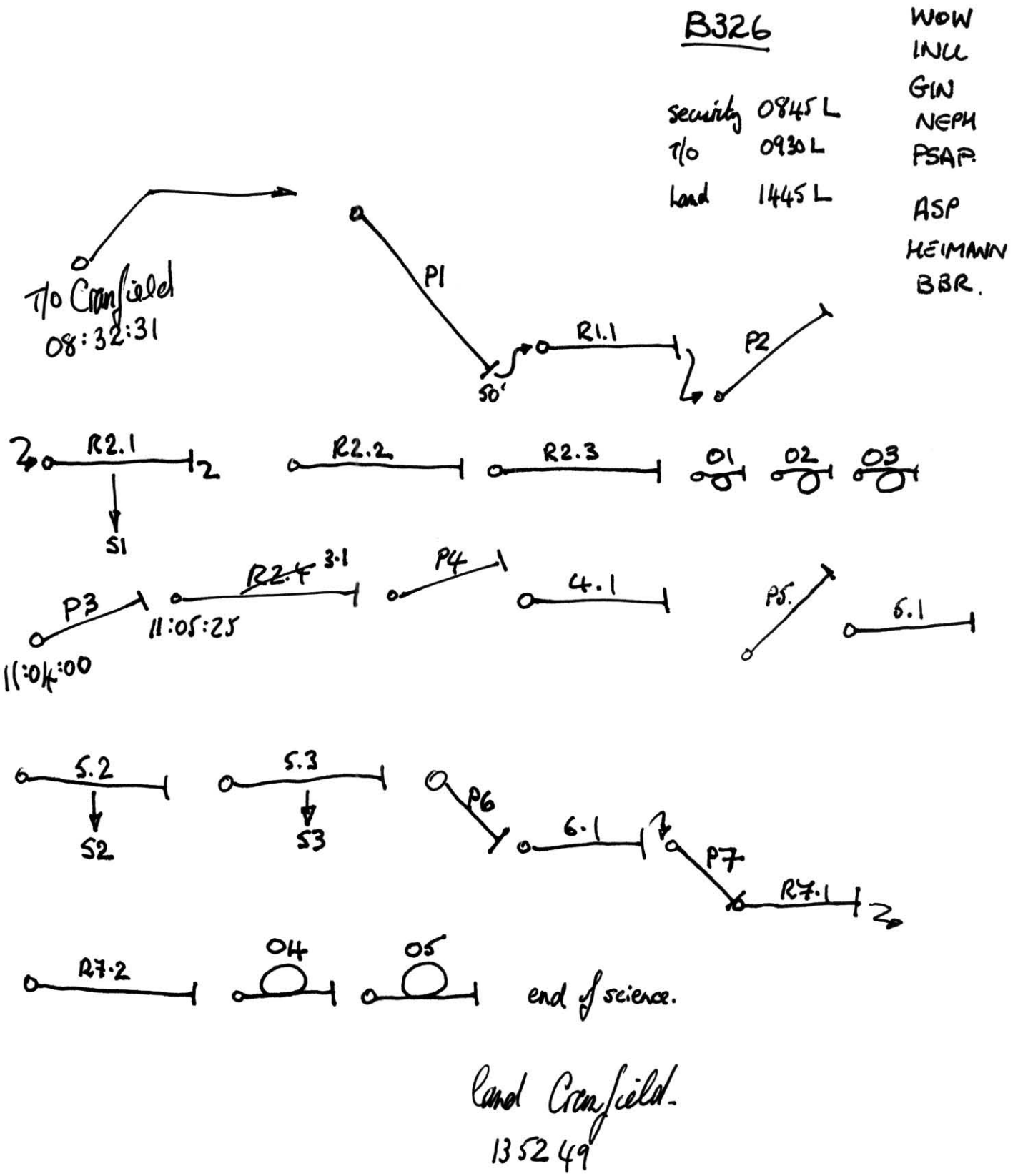
| Channel gains 'sensible' | Ch1 A ( - ) | Ch3 A ( - ) | Ch1 B ( - ) | Ch3 B ( - ) | |
|---|---|---|---|---|---|
| | 47.99 | 41.15 | 54.10 | 40.77 | |
| | Ch16 (40-44) | Ch17 (45-49) | Ch18 (40-44) | Ch19 (40-44) | Ch20 (44-48) |
| | 39.19 | 31.67 | 39.55 | 42.01 | 42.93 |

## Power changeover

| | | |
|---|---|---|
| Headset on before start | | |
| Listen to engine start sequence | 4, 3, 2, 1. | |
| LMD off (3 switches, bottom to top) | | |
| Exit Deimos Software (x) | | |
| POWER CHANGEOVER | | |
| LMD on (3 switches, top to bottom) | then pushbutton | |
| Restart Deimos Software | | |
| System running again | at time | |
| | | |

| Flight # | B326 | Date | 12/09/07 | Operator(s) | Pollard | log page | 2 | of | 2 |
|---|---|---|---|---|---|---|---|---|---|

| *Time* | Run id | Alt/FL | *Remarks* | Sys |
|---|---|---|---|---|
| **07:09:55** | | | M&D on, MARSS all chs ok, Deimos all chs showing something, bit noisy as always. | |
| **07:12:45** | | | Ch 17 doing something a bit weird, dropping fast. | |
| **07:15:00** | | | Panic over, it was just a clearance overhead. | |
| **07:16:37** | | | Resting MARSS scanner. | |
| **08:00:51** | | | MARSS scanner back on. | |
| **08:25:35** | | | Good c/o | |
| **08:37:31** | | | Everything normal after t/o | |
| **09:07:57** | | | 2D not seeing any noise. M&D normal, even have ch 16 continuously since startup. | |
| **09:14:25** | | | Crossed coastline, and confirmed that deimos channels are showing correctly on quick look display. | |
| **09:20:14** | | | Inst clocks synched, MARSS was 1 sec fast. | |
| **09:51:22** | | | Deimos motor interfering with FFSSP, shut down. | |
| **10:53:21** | | | MARSS 2 sec fast, reset. | |
| **13:06:04** | | | After ENDEX, Deimos back on: not interfering w/ FFSSP, initially not much noise on deimos display, but increasing. | |
| **13:18:17** | | | MARSS off. | |
| **13:41:39** | | | Deimos noise bloody awfull, not affecting cloud physics though. | |
| **13:56:33** | | | Deimos off. | |
| | | | | |
| | | | | |
| | | |


B326
Security 0845 L
T/O 0930 L
Land 1445 L
WOW
INLL
GIN
NEPH
PSAP
ASP
HEIMANN
BBR.
T/O Cranfield
08:32:31
P1
50'
R1.1
P2
R2.1
R2.2
R2.3
01
02
03
S1
P3
11:04:00
R2.4
3.1
11:05:25
P4
4.1
P5.
6.1
5.2
5.3
S2
S3
P6
6.1
P7
R7.1
R7.2
04
05
end of science.
Land Cranfield.
13 52 49

# Flight: B326

**KEY**

- Not Fitted
- Fitted, Not Operated
- Duff Data
- Minor Problems
- OK

### Thermometers
- Cabin Temperature:
- Heimann:
- Deiced Temp:
- Non-deiced Temp:

### Hygrometers
- FWVS:
- General Eastern:
- Johnson Williams:
- Nevzorov:
- Total Water Probe:

### Cameras
- Downward Facing:
- Forward Facing:
- Rearward Facing:
- Upward Facing:

### Navigation + Aircraft
- Cruciform GPS:
- GIN Applanix:
- INU Honeywell:
- Radar Altimeter:
- RVSM IAS:
- RVSM Static Pressure:
- XR5 GPS:

**Report Created 11/10/2007 17:35:23**

### Misc Core
- AMTG:
- AVAPS:
- Cabin Pressure:
- Fax machine:
- Printer:
- S9 Static Pressure:
- Satcom C:
- Satcom H:
- Turb Centre-Static:
- Turb Left Right:
- Turb Up-Down:
- Turb Horizontal Chk:
- Turb Vertical Chk:
- Weather Radar:

### DLUs:
- DLU AERACK:
- DLU BBR Lower:
- DLU BBR Upper:
- DLU Core Chem:
- DLU Core Consoles:
- DLU Port Aft:
- DLU Port Fwd:
- DLU Stbd Fwd:

### Radiometers
**Lower:**
- BBR (clear) Lower:
- BBR (IR) Lower:
- BBR (red) Lower:

**Upper:**
- BBR (clear) Upper:
- BBR (IR) Upper:
- BBR (red) Upper:

- ARIES:
- DEIMOS:
- IR Camera:
- JNO2 Lower:
- JNO2 Upper:
- JO1D Lower:
- JO1D Upper:
- MARSS:
- SHIMS Lower:
- SHIMS Upper:
- SWS:
- TAFTS:

**Last Updated:** 11/10/2007 09:16:21

### Cloud Probes
- 2DC:
- 2DP:
- FFSSP:
- PCASP:

- ADA:
- CCN:
- CDP:
- CIP 100:
- CIP 25:
- CPI:
- CVI:
- SID1:
- SID2:

### Aerosol
- CPC 3025A:
- Filters 47mm:
- Filters 90mm:
- Neph - Dry:
- Neph - Wet:
- PSAP:
- AMS:
- CPC 3025 (AMS)
- INC:
- VACC:
- CPC 3010A (CVI):

### Chemistry
- CO Aerolaser 5002:
- NOx TE42C:
- Ozone TE49C:
- Ozone TE49:
- SO2 TE43C:
- TDLAS (NIR) CH4:
- TDLAS (NIR) CO2:

- FAGE:
- Formaldehyde:
- NOxy:
- ORAC:
- PAN:
- PERCA:
- Peroxide:
- PTRMS:
- TDLAS (1C):
- WAS Bags:
- WAS Bottles:

### Misc Non-Core
- CASI/ATM:
- LIDAR:
- LTI:
- SAW Hygrometer:

# Faults / Incidents Log

**Flight No. B326**
**Date: 12/09/2007**

## Instruments

1. HORACE optical disc failure on pre-flight. Disc labelled and replaced by serviceable unit.
2. FM pc crash and restart
3. ISDN link – no connection throughout flight

## Aircraft

nil

## Satcom-H Calls

Nil

## Post Flight - Turb Probe Water Traps

1. Indicate Amount of Water: a) Nil b) 1-2 drops c) ¼ full or more d) Ice present
2. Emptied by:
3. Dried by:

# Pre-Flighter's Log

Date: 12/09/07 Flight No: B326 Pre-Flighter: SWH.

| No. | √ or x | Location | Action | Comments |
|---|---|---|---|---|
| 1 | | Hangar | Collect Dustbin, put on a/c | |
| | | **Aircraft Cabin: Power-up** | | |
| 2 | ✓ | Core Chemistry | Gases x 3 ON | |
| 3 | ✓ | Cabin | All Racks Checked | |
| 4 | ✓ | Fwd CorCon | All reqd CBs made | |
| 5 | ✓ | Aft CorCon | CBs made, PCs ON | |
| 6 | ✓ | HORACE | Optical Disk loaded | |
| 7 | ✓ | HORACE | Recording data | |
| 8 | ✓ | HORACE | DLU Status Checked | |
| 9 | ✓ | HORACE | HORACE Status Checked | |
| 10 | ✓ | Satcom H | Power LED ON | |
| 11 | ✓ | Nevzorov | Checked and OFF | |
| 12 | ✓ | GPS | Checked | |
| 13 | ✓ | INU | Align | |
| 14 | ✓ | Cameras Pictures | Checked x 4 OK | |
| 15 | | Core Chemistry | Instruments Checked OK | |
| 16 | | Core Chemistry | CO Flows Checked OK | |
| 17 | ✓ | FWVS | Set up | |
| 18 | ✓ | Video x 2 | Records okay, Rewind | |
| 19 | ✓ | Delced Rosemount | Heater Checked / Set | |
| 20 | ✓ | Heimann | Calibration Checked | |
| 21 | ✓ | TWC | ON & Checked | |
| 22 | ✓ | GE | Balance checked | |
| 23 | ✓ | INU | Navigate then back to Align | |
| 24 | ✓ | Hubs x 4 | Checked ON | |
| 25 | ✓ | Fwd Console | Miss. Sci Laptop CB made | & CB on Port Fwd SSP |
| 26 | ✓ | CNC | Butanol filled | |
| 27 | ✓ | Dry Neph | Power up & Zero Cal | |
| 28 | X | CGPS | Set up | Re-Start. |
| 29 | ✓ | Miss. Sci Laptop | Checked Onboard | |
| | | **Proceed to External Checks** | | |

External Checks overleaf →

# Pre-Flighter's Log

| No. | √ or x | Location | Action | Comments |
|---|---|---|---|---|
| | | **External Checks** | | |
| 29 | ✓ | Turb Probe | Clean if reqd, Photo taken | |
| 30 | ✓ | JW | Cleaned & Checked | |
| 31 | ✓ | DI Rosemount | Cleaned & Checked | |
| 32 | ✓ | NDI Rosemount | Cleaned & Checked | |
| 33 | ✓ | Nevzorov | Cleaned/windings checked | |
| 34 | ✓ | GE | Cleaned & Checked | |
| 35 | ✓ | Lower BBRs | Domes cleaned/checked | |
| 36 | ✓ | Camera Windows | Cleaned | |
| 37 | ✓ | Heimann | Lens checked OK | |
| 38 | ✓ | TWC Cover | Fitted if required | |
| 39 | ✓ | All other covers | Removed | |
| 40 | ✓ | Dustbin | Returned to hangar | |
| 41 | ✓ | Tools | Check ALL in Toolkit | |
| 42 | ✓ | Tools | Avalon informed | |
| | | **Avalon Checks** | | Signed |
| 43 | AS | Upper BBRs Checked & Cleaned | | AS |
| 44 | AB | ICEX applied | | AB |
| 45 | — | Turb Probe - Traps emptied, detail contents - | | a)Nil b)1-2 drops c)1/4 full or more |
| 46 | — | Turb Probe - Traps dried and resealed | | N/A. |

**MISSING LOG SHEETS:**

The following log sheets are not available for flight B326:

| Log | Reason |
|---|---|
| Cloud Physics Processing | Processing yet to be completed. |
| Core Chemistry | no In Flight log except in cases of instrument problems |
| TAFTS | TAFTS operator does not create a log sheet |
| | |

**Document control**

| Revision | Date | Author | Comments |
|---|---|---|---|
| r0 | 7 Jan 2008 | Doug Anderson | Initial version missing the above noted logs |
| r1 | | | |
| r2 | | | |

**VIDEO RECORDINGS:**

3 x Upward Facing Cameras
1 x For/Downward Facing Cameras
2 x Downward Facing Cameras

Digital8 video recordings from this flight reside with :

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